

Hydrangea quercifolia may be attributed to Nuttall (Gen. 1: 284. 1818), who did not mention Bartram. *Hypericum aureum* may be cited ex Torr. & Gray, Fl. N. Am. 1: 161 (1838). *Magnolia pyramidata* is correctly cited ex Pursh, Fl. Am. Sept. 382 (1814). *Myrica inodora* seems to have been first legitimately published by Chapman (Fl. S. U. S. 427. 1860).

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[It is a real satisfaction to have Dr. Rickett's demonstration that, when not validated by later authors, the names in Bartram's *Travels* are invalid. Those wrongly accepted by me in RHODORA, xlv. 44-50 should not be taken up.—M. L. F.]

AMERICAN THALICTRA AND THEIR OLD WORLD ALLIES

BERNARD BOIVIN

(Continued from page 377)

Subgenus **Lecoyerium**, subg. nov. *Inflorescentia* paniculata, rarissime subcorymbosa. *Flores* dioici vel polygami vel monoici vel in paucis perfecti. *Sepala* 4-(6), superantur *stigmatibus* tempore anthesis. Species typica *Thalictrum dioicum* L. sit.

Sectio **Cincinneria** sect. nov. Sect. *Camptogastrum*, b. *Macropcarpa* Prantl, Nat. Pfl. 3, 2: 66, 1888.—*Plantae* elatae; in speciebus nonnullis nitentes in proximis, glabrae vel puberulentes circa *nodos* aetate florendi. *Folia* percomposita, inflorescentiae numerosa, *foliolis* subrotundis, apice plus minusve trilobatis vel grosse dentatis. *Pedunculi* longissimi et pendentis aetate fructuum maturandorum, brevissimi tamen aetate florendi. *Flores* perfecti, *carpellis* 1-4, *staminibus* purpureis antheris mucronatis. *Sepala* viridia (an semper?). *Stigmata* saepius truncata aetate fructuum maturandorum. *Fructus* plus minusve recurvatus vel fere rectus, plus minusve compressus vel, si sectus, rotundus, *nervis* rugosis, *T. impexo* nostro excepto, stipitatus, nec costatus. Species typica *Thalictrum cincinnatum* nostrum sit.

Height attributed herewith to the different species is based mainly on measurements of a few nearly complete individuals which have been folded until they fitted the Procrustean bed of an herbarium sheet. Collector's observations were available only in the case of *T. Mannii* Hutchinson and on two herbarium sheets, one of *T. innitens* nostrum and one of *T. Steinbachii* nostrum.

The underground system of all the species of this section is unknown. There seems to be no fixed flowering season for the African species, at least those from central Africa.

CLAVIS AD FLORENTIA

- a. Antherae 0.8–0.9 mm., sepala 1.3–2.0 mm. longa, filamenta 1.5–3.0 mm. longa b.
 b. Stigma 1.5–3.0 mm. c.
 c. Filamenta ca. 1.5 mm., sepala 1.3–1.5 mm. longa 30. *T. aduncum.*
 c. Filamenta ca. 2.5 mm., sepala 1.5–2.0 mm. longa 32. *T. innitens.*
 b. Stigma 4.0–5.0 mm. 31. *T. rhynchocarpum.*
 a. Antherae 1.2–3.0 mm., sepala 1.2–6.0 mm. longa d.
 d. Carpella singula raro gemina in floribus singulis e.
 e. Sepala 2.0–3.0 mm. longa f.
 f. Filamenta ca. 8.0 mm. 37. *T. Steyermarkii.*
 f. Filamenta 3.0–4.5 mm. g.
 g. Stylus una stigmatate ca. 4.5 mm., stamina 13–19 in floribus singulis 33. *T. Chapinii*
 g. Stylus una stigmatate 2.0–4.0 mm., stamina 5–8 in floribus singulis 34. *T. impexum*
 e. Sepala ca. 5.0 mm. longa 35. *T. Stolzii.*
 d. Carpella 2–4 in floribus singulis h.
 h. Sepala 1.8–3.5 mm. longa i.
 i. Stylus una stigmatate 4–7 mm. j.
 j. Sepala 2.0–3.5 mm. longa 33. *T. Chapinii.*
 j. Sepala ca. 1.8 mm. longa 36. *T. Steinbachii.*
 i. Stylus una stigmatate 8–13 mm. k.
 k. Stylus una cum stigmatate ca. 13 mm. 37. *T. Steyermarkii.*
 k. Stylus una stigmatate 8–10 mm. 38. *T. cincinnatum.*
 h. Sepala ca. 6 mm. longa 39. *T. macrocarpum.*

CLAVIS AD FRUCTUS FERENTIA

- a. Carpella sessilia 34. *T. impexum.*
 a. Carpella stipitata b.
 b. Carpella solitaria, rarissime gemina c.
 c. Carpella compressa, ad tergi medias valde recurvata 30. *T. aduncum.*
 c. Venter carpelli parum si vero recurvatum d.
 d. Carpella 3–4 mm. lata 37. *T. Steyermarkii.*
 d. Carpella 1.5–2.4 mm. lata e.
 e. Venter carpelli oblanceolatum, ad extremas parum recurvatum 31. *T. rhynchocarpum.*
 e. Venter carpelli lanceolatum vel ovato-lanceolatum f.
 f. Stylus una stigmatate 3.5–4.5 mm. 32. *T. innitens.*
 f. Stylus una stigmatate 5.0–6.0 mm. 33. *T. Chapinii.*
 b. Carpella nunc solitaria, nunc gemina, nunc ternata, in eadem planta g.
 g. Africanum, carpellis lanceolatis 33. *T. Chapinii.*
 g. Americana vel pyrenaicum, carpellis semiovatis vel ovatis h.
 h. Venter carpelli parum recurvatum 3–5 mm. longum. 36. *T. Steinbachii.*
 h. Venter carpelli 5.0–7.5 mm. longum, nervo dorsali convexo vel recto, tamen ad medias parum concavo i.
 i. Pedunculi debiles recurvati, pendentis, nisi steriles. Plantae elatae. Inflorescentia copiose ramosa j.
 j. Stipes ca. 1 mm. 37. *T. Steyermarkii.*
 j. Stipes 2.0–3.5 mm. 38. *T. cincinnatum.*
 i. Pedunculi rigidi ascendentes. Plantae semimetrales. Inflorescentia simplex vel fere simplex 39. *T. macrocarpum.*

T. Stolzii Ulbrich being known only from flowering material has been, consequently, omitted from the second key.

As the fruit reaches maturity, the stigma is likely to break off somewhere along its length. The accompanying illustrations all represent such shortened stigmas, but unbroken ones are usually to be found on each herbarium sheet. Vegetative characters vary but little through the section, exception being made of *T. macrocarpum* Gren.

30. *T. aduncum*, sp. nov. *Planta* metralis vel paululum altior. *Folia* 5-6-ternata, *foliolis* parvis. *Pedunculi* ca. 10 cm., fructibus maturis. *Sepala* 1.3-1.5 mm. longa. *Stamina* 5-6. *Filamenta* ca. 1.5 mm. *Antherae* oblongae, 0.8-0.9 mm. longae, apice obtusae, breviter acuminatae. *Ovaria* solitaria. *Stylus* una stigmatate 1.5-2.0 mm., aetate maturandi 4.5-6.0 mm. *Fructus* 13.5-15.5 mm. longus, compressus, ad medias valde recurvatus, *stipite* 2.5-3.0 mm., ventre ca. 7.0 mm. longo, ca. 2.5 mm. lato, *nervis* simplicibus.—CONGO: *Humbert* 7448, montagnes à l'ouest du lac Kivu, forêt à l'W de Tshibinda, alt. 2000-2400 m., février-mars 1929 (G, TYPE). FIG. 30, a-d.

31. *T. RHYNCHOCARPUM* Dill. & Rich., Ann. Sci. Nat. ser. 2, 14: 262, 1841. *T. longepedunculatum* Hochst. & Steud. ex Steud. Nom. Bot. 2: 676, 1841 ut synonymon, nec *Thalictrum longepedunculatum* Sennen, Bull. Soc. Bot. Fr. 73: 642, 1926. *T. chymocarpum* Dill. ex Walp. Ann. Bot. Syst. 2: 5, 1851. *T. Mannii* Hutchinson ex Hutchinson & Dalziel, Fl. W. Trop. Afr. 1: 66, 1927.—*Planta* sesquimetralis usque bimetralis (an metralis usque ad quadrimetralis?). *Folia* ca. 5-ternata, *foliolis* 0.3-2.0 cm. diametro. *Sepala* 1.4-1.8 mm. longa. *Stamina* 5-10. *Antherae* ellipsoideae ca. 0.9 mm. *Filamenta* ca. 3.0 mm. *Stylus* una stigmatate 4.0-5.0 mm., aetate maturandi 4.5-5.5 mm. *Carpella* matura 15.5-18.0 mm. longa, parum recurvata in apice *stipitis* 2.5-5.0 mm. et ad apicem ventris oblanceolati nec compressi 8-10 mm. longi et 1.5-1.8 mm. lati, *nervis* simplicibus.—NIGERIA: according to Hutchinson, in the Cameroon Mts. and at Buea and Fernando Po (type locality of *T. Mannii*). ABYSSINIA: *Schimper* 472, Berg Semajata, 7300 f., July 14, 1862 (G); *Schimper* 1137, inter Endchedcap et Schoata, 1838-1842 (G); *Schimper* 1183, Gerra, 7800 ft. (F). BELGIAN CONGO: *Linder* 2116, Mt. Ninagongo, 8000-9000 ft., Feb. 16, 1927 (G). FIG. 31, a-d.

The type of this species from Abyssinia, is presumably preserved at Paris and has not been seen, but the description is clear enough and, the species being the only one found in the mountains of Abyssinia, there is no doubt about its interpretation. The illustration in A. Richard Tent. Fl. Abyss., tabula 2, confirms this interpretation. On the herbarium sheet of *Schim-*

per 1137, there is the following manuscript note: "*Thalictrum rhynchocarpum*. Ach. Rich. in *Ann. sc. nat., Bot., XIV* (1840) p. 262 (publ. le 24 Mars 1841)".

Thalictrum longepedunculatum Hochst & Steud. was not given a new description when published, it was simply a new name for *T. rhynchocarpum* Dill. & Rich.

T. chymocarpum Dill. is probably an error of spelling or printing.

T. Mannii Hutchinson. Described from flowering specimens from Nigeria, a region from which I have not seen any *Thalictrum*. The characters stressed by the describer seem to fall within the range of variation of *T. rhynchocarpum* Dill. & Rich. The stamens and the fruit, however, are too briefly described to enable one to form a definite opinion about the status of this species. As described by Hutchinson, it is a plant 1 to 4 meters high. As far as records go, this is the tallest plant in the whole genus.

32. *T. innitens*, sp. nov. *Planta* ca. 1.5 metrorum. *Folia* usque ad septies ternata. *Pedicelli* ca. 10 cm. aetate fructuum maturandorum. *Sepala* 1.5–2.0 mm. longa. *Stamina* 5–6. *Antherae* ovoideae breviter mucronatae, ca. 0.8 mm. *Filamenta* ca. 2.5 mm. *Ovaria* solitaria, *stigmatate* 2.0–3.0 mm. usque ad 4.5 mm. accedente cum carpella maturant. *Fructus* compressus rectus vel parum recurvatus 10–14 mm. longus, *stipite* 1.5–2.0 mm., *ventre* ovoideo-lanceolato 6.5–7.5 mm. longo, 2.0–2.4 mm. lato, *nervis* arcuantibus simplicibus.—NYASSA: *Buchanan* 64, 1891 (US); *Stolz* 148, Station Kyimbila, Bundali Gebirge, 1300–1500 Meter Seehöhe, Nov. 25, 1907 (G, US). RHODESIA: *Swynnerton* 352, Chipete forest-patch, a climber common on forest outskirts, alt. 3800 ft., 1906 (US). TRANSVAAL: *Drakensberg*, Pilgrim's Rest (F 69,381). ORANGE: *Cooper* 1038, in woods, 1862 (NY). NATAL: *Wylie* (*J. M. Wood's* no. 8128), Wahawag Mtn., alt. 6–7000 ped., March 22, 1901 (US). CAPE: *Murray* 598, in densis sylvis "Kabousie", alt. 3500 ft., flor. dec. (G, TYPE; F, ISOTYPE). FIG. 32, a–d.

It is doubtful whether this plant really is a climber. The herbarium specimens show no evidence to that effect. The stem is hollow, thin and rather easily crushed and seems an inappropriate support for a plant of this size. The large and abundantly branched inflorescence with its pendulous fruits is likely to become more or less entangled in the branches of adjoining shrubs, thus giving the plant the additional support needed.

This undoubtedly holds true for most of the species of the § CINCINNERIA, especially the tallest ones.

33. *T. Chapinii*, sp. nov. *Planta* circa sesquimetralis. *Folia* usque ad quinquies ternata. *Pedicelli* 5–10 mm. *Sepala* 2.0–3.5 mm. longa. *Stamina* 13–19. *Antherae* oblongo-lanceolatae 1.4–2.1 mm., *mucrone* 0.2–0.7 mm. *Filamenta* 3.2–4.5 mm. *Ovaria* nunc singula nunc gemina, nunc ternata. *Stigma*, aetate fructus maturandi, 5.0–6.0 mm. *Carpella* matura parum recurvata compressaque, 13.0–14.5 mm. longa, *stipite* 1.5 mm., *ventre* ca. 6.5 mm. longo, ca. 2.0 mm. lato, *nervis* arcuantibus simplicibusque.—CONGO: *Chapin* 386, slope of Mt. Karisimbi, Kivu district, alt. 11,000 ft., rather common about Kabara, about same level, June 19, 1927 (NY, TYPE); *J. P. Chapin* 518, Kivu district, mts. s. w. of Lemera, lower Ruzizi Valley, alt. 9600 ft., July 17, 1927 (NY). KENYA: *Mearns* 1350 & 1414, western slopes of Mount Kenia, along the trail from West Kenia Forest Station to summit, in the "giant heath" zone, at about 3630 meters, Sept. 21–27, 1909 (1350:US; 1414:NY, US); *Mearns* 1670 & 2320, western slopes of Mount Kenia, along the trail from West Kenia Forest Station to summit, bamboo zone, at about 3000 meters, Sept. 28–Oct. 7, 1909 (1670: F, US; 2320: US). FIG. 33, a–d.

Although flowering material of *T. Chapinii* and *T. innitens* is distinguished easily indeed, these species become more or less confluent as they mature their fruits.

34. *T. impexum*, sp. nov. *Planta* verosimiliter circa bimetalis. *Folia* ternata usque ad sexies. *Pedunculi* 5–9 cm. *Sepala* 2.0–2.4 mm. longa. *Stamina* 5–8 in floribus singulis. *Antherae* oblongo-lanceolatae. *Ovaria* singula rarius gemina, *stigmatate* 2.0–4.0 mm., aetate maturandi, 4.0–5.0 mm. longo, 1.1–1.3 mm. lato, *pariete* membranaceo, *nervis* simplicibus parumque arcuantibus.—CONGO: *Chapin* 143, Kalongi, Batahu Valley, West Ruwenzori, alt. 6900 ft., Dec. 29, 1926 (NY); *Chapin* 188, Kalongi, West Ruwenzori, common hereabout, fl. dull dark purplish tinged with green, alt. 6950 ft., Jan. 8, 1927 (NY). KENYA: *A. G. Curtis* 817, Mau range, a forest valley, leaves apple-green, alt. 5000 to 7000 ft., July 26, 1923 (G); idem 839, flower brownish, leaf dark cress-green, July 27 (G); idem 850, leaves parrot-green, July 27 (G); *Mearns* 595 & 630, between the Naiok River and Lake Naivasha, alt. 1800–2100 m., July 9–12, 1909 (595: US; 630: US, 630, 652, TYPE: US 630, 653 ISOTYPE). FIG. 34, a–d.

This species is peculiar for this section because of its nearly sessile fruit. When in flower it closely resembles *T. Chapinii* which occupies about the same range at higher altitudes.

35. T. STOLZII Ulbrich, Notizbl. Berl. Gart. **10**: 916, 1930. Herba perennis erecta ad 1.25–1.50 m. alta parce ramosa *caule* basi 7–8 mm. crasso, omnino glaberrimo fusco-violaceo. *Folia* caulina in vaginam fere 35 mm. longam 15–20 mm. latam dilatato, usque ad laminae ramificationem \pm 12 cm. longo glaberrimo; lamina 3–4-pinnata *foliolis* \pm 3 mm. petiolulatis circuitu orbicularibus vel reniformibus margine grosse crenatis crenis subapiculatis, 10–12 mm. longis, 10–15 mm. latis, glaberrimis, supra atroviridibus, subtus glaucescentibus, nervis reticulatis supra inconspicuis, subtus prominentibus. *Inflorescentia* satis parva decomposita contracta paniculata. *Flores* satis magni lilacei *pedicello* brevissimo, 2–4 mm. longo, glaberrimo instructi patentibus, basi *bractea* lineari-lanceolata \pm 4 mm. longa membranacea, 0.5–1 mm. lata glaberrima lilacea munita; *sepala* ovalia vel late-ovalia \pm 5 mm. longa, \pm 3 mm. lata, obtusa, glaberrima \pm quinquenervia. *Stamina* \pm 8 mm. longa *filamentis* filiformibus tenerrimis glaberrimis superne vix dilatatis sparsis (5–10), *anthera* lineari-oblonga 1–1.5 mm. longa. *Ovaria* (plerumque in flore unicum, rarius 2) brevissime stipitata vel subsessilia glaberrima anguste lineari-lanceolata cum stylo \pm 5 mm. longa in stylum fere 3 mm. longum rectum sensim attenuata; *stigma* apice lateraliter decurrens fere 1 mm. longum. Fructus ignotus.—“*Ostafrika*: Nyassa-Hochland Kyimbila im Bambuswalde bei Bulongwa, ca. 2100 m ü. d. M. (blühend 17. September 1913—AD. STOLZ n. 2175!).”

“Die Art steht in der Fruchtbildung augenscheinlich *Th. rhynchocarpum* Dill. und Rich. nahe, das gleichfalls nur wenige bis 1 Fruchtblatt . . . hat aber einen sehr lockeren, sparrig verzweigten Blütenstand und sehr kleine grüne Blüten. *Th. Stolzii* ist leicht kenntlich an den grossen rötlichen oder lila Blüten in einem (im vorliegenden Material) dicht zusammengezogenen Blütenstande. Leider liegen keine bis zur Fruchtreife entwickelten Pflanzen vor; es ist jedoch anzunehmen, dass sich der Blütenstand später in vielleicht ähnlicher Weise wie bei *Th. rhynchocarpum* streckt.

“Es ist auffällig, dass unter dem sehr reichhaltigen Material, welches das Botanische Museum in Berlin-Dahlem aus dem tropischen Afrika erhielt, diese Art bisher nicht vertreten war; sie scheint demnach selten und bisher übersehen zu sein.

“Anmerkung: Im gleichen Gebiete: Kyimbila, Mkinga, Mwakalila, Bergwiese in 2000 m ü. d. M. sammelte AD. STOLZ (8. Januar 1914 n. 2421!) eine Pflanze, die wohl gleichfalls hierher zu stellen ist. Diese ist nur etwa 40 cm hoch, unverzweigt mit

kleinen Blättern und meergrünen Blättchen mit meist dreilappiger Spreite. Die Blüten (es liegen nur Knospen vor) sind gleichfalls sehr gross und nach Angabe des Sammlers weiss, aussen rosa. Es handelt sich vermutlich nur um eine Lichtform von *Th. Stolzii*, doch ist das Material leider zu spärlich, um eine sichere Bestimmung zu ermöglichen."

The preceding text is a copy of the original description and comments.

No material has been seen which could be ascribed to this species; however the characters of the flowers contrast strongly with all other species of this section. Ulbrich's description of the inflorescence of *T. Stolzii* applies equally well to the flowering stage of any species of this group. Similarly his description of the inflorescence of *T. rhynchocarpum* Dill. & Rich. characterizes all fruiting material belonging to the § CINCINNERIA. The leaves are described as "*pinnata*," but this we much doubt. If true indeed, there should be no trouble at all to recognize the species at any stage of its life-cycle. The fruits are not described and it is difficult to guess what they look like. The only material at hand from Nyassa (*Stolz 148*, 25 Dez., 1907), bears immature fruits strongly suggesting those of *T. innitens* but they are somewhat narrower. This latter specimen is cited under *T. innitens*.

36. *T. Steinbachii*, sp. nov. *Planta* ca. 3 m. alta. *Pedicelli* 5–10 cm. *Sepala* ca. 1.8 mm. longa, *Ovaria* nervosa pauca, 2–4 in flore. *Stylus* una stigmatate 4–7 mm. *Carpella* matura recurvata semi-ovata, 6.0–8.5 mm. longa, *stipite* 1.5–2.0 mm., ventre 3.0–5.0 mm. longo, 1.5–2.0 mm. lato, *nervo dorsali* concavo. Floret verosimiliter Decembri.—BOLIVIA: *Steinbach 8869*, Incahaca, Prov. Chapare, Depart. Cochabamba, Feuchte Böschung, Meereshöhe 2200 m., Jan. 21, 1929 (G, TYPE and ISOTYPE; F, NY, ANS, ISOTYPES). FIG. 36, a–c.

One specimen bears the following note: *ca 3 M. Ranksustande*. This plant is probably no more of a climber than *T. innitens* but, just as does the latter, probably gains additional support when its inflorescence gets entangled in the surrounding vegetation.

37. *T. STEYERMARKII* Standley, Field Mus. Nat. Hist. Bot. 22: 230, 1940. *Planta* 1.0–2.5 metrorum, glabra nisi in carpellis. *Folia* nonnunquam metralia, ad septies ternata, saepius conspicue stipellulata. *Pedicelli* ca. 5 cm. *Sepala* elliptica purpurascentia ca. 3 mm. longa. *Filamenta* ca. 8 mm. *Antherae* oblongo-lanceolatae ca. 3 mm., acumine 0.2–0.6 mm. *Stylus*

una cum stigmatate ca. 13 mm. *Carpella* matura firma 9–12 mm. longa, cinerea, pubescentia. *Pubescentia* pilorum translucidorum rectorum densorum arachnoideorum. Si pubescentia tactu deleta est, carpella purpurascencia revelantur. *Nervi* fructuum in costis sublatis, plus minusve ramosi et anastomosi, minute ad summas sinuosi et nonnunquam gibbosi, nervus ventralis convexior et semper gibbosus, dorsalis rectus esset nisi ad medias parum concavitas. *Stipes* fructus ca. 1 mm., venter 5.5–6.5 mm. longus et 3.0–4.0 mm. latus, rostrum 2.5–4.0 mm. directum, paries 0.3–0.5 mm. crassitudinalis. Verosimiliter floret Novembri. GUATEMALA, SAN MARCOS: *Steyermark* 36,575, northwestern slopes of Volcán Tajumulco, barrancos south and west of town of Tajumulco, moist slopes around seepage at base of barranco, herbaceous, 8 ft. tall, leaves blue-green above, grass-green beneath, follicles glaucous-green, alt. 2300–2500 m., Feb. 25, 1940 (F, TYPE, mounted on two sheets); *Standley* 68,465, above San Rafael Pie de la Cuesta, Barranco Eminencia, wet meadow, common, alt. 2100–2400 m., March 14–15, 1939 (F, paratype); *Steyermark* 36,483, near southeast portion of Volcán Tacaná, between Canjula and La Unión Juárez, herb 5 ft. tall, leaves membranaceous, grass-green above, silvery-green beneath, Feb. 22, 1940 (F, paratypes); *Steyermark* 36,989, lower to middle slopes of Volcán Tajumulco, between Todos Santos and Finca El Provenir, slopes around quebrada, alt. 1300–3000 m., March 1, 1940 (F, paratype); *Steyermark* 36,191, between La Vega ridge along Rio Vega and northeast slopes of Volcán Tacaná, to 3 miles from Guatemala-Mexico boundary, in vicinity of San Rafael, shaded banks of slopes bordering escarpment of stream, herb 5 ft. tall, alt. 2500–3000 m., Feb. 20, 1940 (F, paratype). QUEZALTENANGO: *Standley* 83,523, south of San Martín Chile Verde, region of Las Nubes, damp densely forested barranco, herb 2 m. tall, alt. about 2250 m., Jan. 16, 1941 (F); *Standley* 85,131, South of San Martín Chile Verde, region of Las Nubes, on white sand mountain side, damp thicket, herb 1.5 m. tall, alt. about 2250 m., Jan. 27, 1941 (F); *Standley* 85,680, between San Martín Chile Verde and Colombo, above Mujuliá, in damp dense mixed forest on white sand slopes, herb 1.5 m. tall, alt. about 1800 m., Feb. 1, 1941 (F); *Standley* 83,652, south of San Martín Chile Verde, region of Las Nubes, densely forested barranco, herb 1.5 m. tall, alt. about 2250 m., Jan. 16, 1941 (F); *Standley* 85,140, south of San Martín Chile Verde, region of Las Nubes, damp thicket, herb 1 m. tall, Jan. 27, 1941 (F). FIG. 37, a and b.

38. T. **cinnatum**, sp. nov. *Planta* verosimiliter ca. 3 metrorum vel altior. *Pedicelli* 13–17 cm. *Antherae* oblongo-lanceolatae, ca. 2.5 mm. *Ovaria* 2–3 in flore. *Carpella* matura compressa, 9–13 mm. longa, stigmatate 8–10 mm., *stipite* 2.0–3.5,

ventre 5.0–7.5 mm. longo, 2.5–3.0 mm. lato, *nervis* parum ramosis et parum anastomosis nervo dorsali fere recto nisi esset ad medias parum concavus. Tempus florendi ignotum verosimiliter vernale.—BOLIVIA: *Steinbach* 9231, Incachaca, Prov. Chapare, Dept. Cochabamba, Wald Meereshöhe 2300 m., Febr. 18, 1929 (G, TYPE; ANS, F, NY, ISOTYPES). FIG. 38, a and b.

Judging from the herbarium fragments, this species is probably as high if not higher than *T. Steinbachii* or even than *T. rhynchocarpum* Dill. & Rich. (*T. Mannii* Hutchinson).

39. *T. MACROCARPUM* Grenier, Séances Publ. Acad. Sci. Besançon 117. 1838. *T. majus* Gren. Act. Soc. Linn. Bordeaux, 8: 2, 1836, nec *T. majus* Crantz, Stirp. Austr. 2: 80, 1763, nec *T. majus* Jacq. Fl. Aust. 5: t. 420, 1788, nec *T. majus* Tenore, Syll. Pl. Vasc. Fl. Neap. 265, 1831, nec *T. majus* Dunn, Ind. Sem. Hort. Panorm. 32, 1880.—*Planta* omnino glabra semimetralis. *Folia* inferiora 1–3 in planta, 4-ternata. *Folia* caulinaria desunt. *Folia* inflorescentiae inferioris 3-ternata *foliolis* 3–5-lobatis. *Folia* inflorescentiae superioris ovata integra. *Stipulae* et *stipellulae* desunt. *Inflorescentia* simplex vel, si ad basem ramosa, ramis bi-tri-floriferis foliumque solitarium ferentibus. *Pedunculi* 5–10 cm., aetate fructuum maturandorum. *Flores* lutei. *Sepala* elliptica 5–6 mm. longa. *Antherae* ca. 3 mm., *acumine* 1.0–1.5 mm. *Ovaria* 2–4 in flore. *Stigma* 8–9 mm., in primis rectum vel recurvatum, deinde incurvatum, alis ca. 0.5 mm. lat. *Carpella* matura valde compressa, *stipite* 0.5–2.0 mm., ventre 8.5–10.0 mm. longo et 3–4 mm. lato, *nervo* dorsali fere recto vel parum convexo, ventrali multo quam dorsali convexiore, *nervis* lateralibus conspicue ramosis et anastomosis. Floret Julio et Augusto.—FRANCE: *Cosson*, Basses Pyrénées, prope Eaux-Bonnes, in monte, montagne de Gourzi, 7 augusti, 1847 (G); *Forestier*, près les Eaux-Bonnes, pic d'Anis, 5 août, 1841 (G); *Philippe*, Basses Pyrénées, col de Tortes, août, 1847 (G). FIG. 39.

Sectio CAMPTOGASTRUM Prantl, Nat. Pfl. 3, 2: 66, 1888. *Radix* fibrosa. *Folia* saepe stipellulata. *Foliolae* haud peltatae. *Pedicelli* sub fructum recurvatum. *Flores* polygamo-monoici, plurimi perfecti, pauci masculi, raro perfecti omnes. Masculi nonnulli ad anthesim veniunt cum carpella perfectorum maturant. *Antherae* oblongae lanceolatae vel lineares, plus minusve acuminate. *Filamenta* purpurascens nec clavata. *Ovaria* sessilia vel stipitata, saepius, si adsunt, 4–10 in floribus singulis. *Stigmata* filiformia, nec alata. *Carpella* matura plus minusve compressa, nonnunquam stipitata, *nervis* plus minusve ramosis, saepe et anastomosantibus et sinuosis et gibbosis. Species typica *Thalictrum gibbosum* Lec. sit.

Some of the species are described in the text as having all

flowers perfect, but this is a point still imperfectly known, for when the ovaries start enlarging the plant still goes on blooming but these later flowers are always staminate. This stage seems not to be represented for all species of this section. However, *T. Venturii* and *T. inuncans* are definitely known as always having perfect flowers.

The following key is based mainly on pubescence, notwithstanding the fact that the fruit has furnished the main characters on which to base each of the successive species. Only about one third of the herbarium specimens having mature fruits, and the flowers not being very much varied, it is not possible to build up a natural key which would be a satisfactory tool with which to identify herbarium material. Although this key is artificial it is still not possible to identify all flowering specimens, but it has been found that by comparing such flowering plants with only those species known to occur in the region of the plant to be named, it was usually possible to arrive at a satisfactory identification. This is why distribution-data have been given in the key.

- a.* Ovaria 18–36 in flore. In Argentina 71. *T. Venturii.*
a. Ovaria 0–10 in flore *b.*
b. Pubescentia diversa, aliqui pilorum aciculariformes compressi triangulares et paullulum recurvati. Staminum filamenta 15–17 mm. In Bolivia 40. *T. inuncans.*
b. Pili aciculariformes et recurvati desunt. Staminum filamenta breviora *c.*
c. Planta nana 20–50 cm. alta, foliis imis plurimis, folium caulinarium vel solitarium vel deest, folia inflorescentiae vel 1–3, vel desunt. Foliolae parvae, 3–10 mm. longae. In Hidalgo 50. *T. pachuense.*
c. Folia caulinarum plura *d.*
d. Foliolae cordatae, dentatae, acuminatae. Pubescentia e pilis stellatis stipitatis. In Guatemala 51. *T. Standleyi.*
d. Foliolae apice trilobatae vel grosse dentatae, nec acuminatae. Pubescentia vel e pilis simplicibus vel deest *e.*
e. Foliolae inferne glabrae *f.*
f. Stylus una cum stigmatibus 2–4 (–5) mm. *g.*
g. Filamenta 3–5 mm. Carpella matura 2.7–3.5 mm. longa *h.*
h. Filamenta 4–5 mm. Carpella matura ca. 3.5 mm. longa, nervis simplicibus nec ramosis. In Vera Cruz 41. *T. Galeottii.*
h. Filamenta ca. 3 mm. Carpella matura 2.7–3.0 mm. longa, nervis ramosis et anastomosantibus, nervo ventrali gibboso. In Sonora 55. *T. parvifructum.*
g. Filamenta 6–10 mm. Carpella matura 6–9 mm. longa *i.*

- i.* Antherae apice truncatae, vel acumine 0.1–0.2 mm. Carpella matura gibbosa. In Guatemala. 52. *T. Johnstonii.*
i. Antherae acumine 0.5–1.0 mm. Carpella matura non gibbosa. In Peruvia, Bolivia, et Argentina. 43. *T. decipiens.*
f. Stylus una stigmatate (4–) 5–15 mm. *j.*
j. Carpella matura nervo ventrali nullo modo gibboso. *k.*
k. Nervis lateralibus parum ramosis, nec sinuosis, nec anastomosantibus. *l.*
l. Stylus una stigmatate 4–10 mm. *m.*
m. Carpella matura 4.5–5.5 mm. longa. In Mexico et Costa Rica. 42. *T. Hintonii.*
m. Carpella matura 6.5 mm. vel longiora. *n.*
n. Carpella 2–3 mm. lata nervo dorsali convexo vel fere recto. Stigma 4–8 mm. Planta nonnunquam glauca. In Peruvia, Bolivia et Argentina. 43. *T. decipiens.*
n. Carpella 3.0–3.2 mm. lata, nervo dorsali basi concavo. Stigma 8–10 mm. longum. Planta nullo modo glauca. In Panama. 44. *T. viridulum.*
l. Stylus una stigmatate 10–15 mm. In Peruvia. 46. *T. Macbrideanum.*
k. Nervis lateralibus ramosis et anastomosantibus, saepe sinuosis. *o.*
o. Stipes ovarii 0.5–1.5 mm. Carpella matura 9–10.5 mm. longa. In Venezuela, Colombia et Ecuador. 70. *T. podocarpum.*
o. Stipes ovarii 0–0.5 mm. Carpella matura 4.5–8.0 mm. longa. *p.*
p. Carpella matura 6.5–8.0 mm. longa. In Tamaulipas, Nuevo León et San Luis Potosí. 47. *T. Deamii.*
p. Carpella matura 4.5–5.5 mm. longa. *q.*
q. Folia caulinarum conspicue petiolata. Planta glauca. In Chihuahua, Durango, Nuevo León et San Luis Potosí. 48. *T. grandifolium.*
q. Folia caulinarum sessilia in apice dilatationis petiolaris. Planta nullo modo glauca. In Guerrero. 49. *T. Hernandezii.*
j. Carpella matura nervo ventrali gibboso, lateralibus saepius gibbosis. Gibbositas patet nonnunquam in ovario, saepius tamen in carpellis immaturis. *r.*
r. Carpella matura 2.7–3.0 mm. longa. Planta semimetralis vel minor. In Sonora 54. *T. parvifructum.*
r. Carpella matura 4.0–10.5 mm. longa. *s.*
s. Carpella matura 4–8 mm. longa. *t.*
t. Carpella matura 4–6.5 mm. longa. *u.*
u. Petioluli divaricati vel refracti parum incurvati. Foliolae basi cordatae. Carpella matura 6.0–6.5 mm. longa, 3.0–3.2 mm. lata, stipite 0.5–1.0 mm. Stipes ovarii 0–0.5 mm. In Colombia. 63. *T. refractum.*

- u.* Petioluli plus minusve ascendentes.
 Sepala 2–5 mm. longa . . . *v.*
- v.* Carpella matura 4–6 mm. longa,
 1.8–2.0 mm. lata, stipite 1–3 mm.
 Sepala 2.5–3.5 mm. longa. Stipes
 ovarii 0.5–1.0 mm. In Baja
 California 64. *T. peninsulare.*
- v.* Carpella matura 4–8 mm. longa, 2–3
 mm. lata, stipite 0.5–2 mm. Sep-
 ala 3–5 mm. longa. Stipes ovarii
 0.2–0.5 mm. longus. In Vera
 Cruz, Hidalgo, Mexico, Puebla,
 Morelos et Oaxaca 65. *T. gibbosum.*
- t.* Carpella matura 7–8 mm. longa . . . *w.*
- w.* Carpella matura saepius apice acuta,
 7–8 mm. longa, 2–3 mm. lata, stipite
 0.5–2.0 mm. Sepala 3–5 mm. longa.
 Stipes ovarii 0.2–0.5 mm. longus.
 In Vera Cruz, Hidalgo, Mexico,
 Puebla, Morelos et Oaxaca . . . 65. *T. gibbosum.*
- w.* Carpella matura saepius apice obtuso,
 7–7.5 mm. longa, ca. 3.3 mm. lata,
 stipite 1.0–2.5 mm. Sepala 5–6.5
 mm. Stipes ovarii 0.5–1.5 mm.
 In Ecuador 66. *T. vesiculosum.*
- s.* Carpella matura 9.0–10.5 mm. longa. In
 Colombia, Venezuela et Ecuador.
 69. *T. podocarpum.*
- e.* Foliolae inferne plus minusve pubescentes . . . *x.*
- x.* Pubescentia caulinarum e pilis opacis undulatis,
 acuminatis 1–4 millimetralibus. Foliolae in-
 ferne sparse pubescentes. In Oaxaca et
 Puebla 53. *T. lanatum.*
- x.* Pubescentia caulinarum e pilis millimetralibus vel
 brevioribus vel deest . . . *y.*
- y.* Pubescentia foliorum paginae inferioris e pilis
 omnibus capitatis . . . *z.*
- z.* Planta omnino pubescens carpellis maturis
 ca. 6.5 mm. longis, 2.0–2.2 mm. latis. In
 Panama 45. *T. panamense.*
- z.* Foliolae superne glabrae . . . *α.*
- α.* Pili caulinarum et rameales uniseriati et
 translucidi. Carpella matura ca. 3 mm.
 longa. In Durango 54. *T. Pennellii.*
- α.* Pili omnes capitatis et translucidi. Carpella
 matura 4.0–5.5 mm. longa . . . *β.*
- β.* Sepala viridia ca. 3 mm. longa. Carpella
 matura ca. 5.5 mm. longa, ca. 3.8 mm.
 lata. In Coahuila 57. *T. laeteviride.*
- β.* Sepala colorata 3.8–4.5 mm. longa.
 Carpella matura 4–5 mm. longa, 2.3–
 2.9 mm. lata. In Mexico . . 59. *T. subpubescens.*
- y.* Pubescentia e pilis vel uniseriatis translucidis,
 vel opacis crassiusculis coloratis vel aliis
 capitatis, aliis opacis crassiusculis coloratis . . . *γ.*
- γ.* Pubescentia e pilis omnibus uniseriatis
 translucidis densisque . . . *δ.*
- δ.* Carpella glabra. In Vera Cruz, Mexico,
 Distrito Federal et Oaxaca 61. *T. Conzattii.*
- δ.* Carpella plus minusve pubescentia . . . *ε.*

- ε. Folia caulinarum conspicue petiolata.
 Carpella matura 3.3–5.0 mm. longa.
 In Jalisco, Hidalgo et Michoacán.
 60. *T. pubigerum*.
- ε. Folia caulinarum sessilia vel fere sessilia
 in apice dilatationis petiolaris. Car-
 pella matura 5–6 mm. longa. In
 Mexico, Michoacán et Puebla. 62. *T. sessilifolium*.
- γ. Pubescentia e pilis omnibus crassiusculis
 opacis coloratis, vel aliis crassiusculis
 coloratis opacis obtusis interdum acu-
 minatis. . . . ζ.
- ζ. Carpella matura 2.7–3.0 mm. longa. Stylus
 una stigmatate 3–5 mm. Planta semi-
 metralis vel brevior. In Sonora. 55. *T. parvifructum*.
- ζ. Carpella matura 3.5–8.0 mm. longa. . . . η.
- η. Foliolae inferne densissime pubescentes. . . . θ.
- θ. Carpella matura 3.5–4.5 mm. longa.
 In San Luis Potosí, Zacatecas, Vera
 Cruz, Hidalgo, Mexico, Distrito
 Federal et Michoacán. . . . 56. *T. strigillosum*.
- θ. Carpella matura 7–8 mm. longa. In
 Oaxaca. . . . 69. *T. Nelsonii*.
- η. Foliolae inferne sparse pubescentes. . . . ι.
- ι. Stigma 8–10 mm. In Peruvia. . 66. *T. longistylum*.
- ι. Stigma brevius. . . . κ.
- κ. Carpella matura 5–6.5 mm. longa.
 In Peruvia. . . . λ.
- λ. Carpella matura stipite 0.5–1.0
 mm. . . . 58. *T. lasiostylum*.
- λ. Carpella matura stipite ca. 2 mm
 67. *T. rutidocarpum*.
- κ. Carpella matura 7–8 mm. longa.
 In Oaxaca. . . . 69. *T. Nelsonii*.

This section is restricted to the mountains of Mexico, Central America and South America. In general, the species are based on the different types of fruits, for the flowers offer but few specific characteristics. However, two species, *T. gibbosum* Lec. and *T. decipiens* nostrum, show a high degree of variation in their fruits and they are pretty hard to characterize. A key to the flowering specimens would leave about 8 or 10 species, all glabrous, which could not be otherwise separated were it not for the fact that their ranges do not overlap in general. The interpretation of the different names already published is based on types or isotypes or syntypes or photographs of types or fragments of types. Only in two cases, *T. Hernandezii* Tausch and *T. lasiostylum* Presl, was it necessary to form an opinion on the original description only. Lecoyer did not have the opportunity of studying the types of those two species and considered them as synonyms.

Subsectio SIMPLICIA, subsect. nov. *Plantae* glabrae, *Thalictrio inuncante* nostro excepto. *Ovaria* 10 vel pauciora in flore. *Carpella* matura compressa *nervis* simplicibus vel parum ramosis anastomosantibus et reticulatis, nec gibbosis, raro sinuosis.

40. *T. inuncans*, sp. nov. *Planta* verosimiliter 1.5–2.0 m. alta. *Pubescentia* caulis ramorum petiolorum petiolulorumque densa e pilis aliis capitatis translucidis, aliis crassiusculis triangularibus compressis recurvatisque. *Foliolae* superne glabrae, inferne puberulentes pilis capitatis translucidis vestitae. *Flores* perfecti (!) glabri. *Sepala* ovata ca. 5 mm. longa. *Antherae* nonnunquam falcatae ca. 4 mm., vel apice truncatae, vel obtusae cum acumine 0.1–0.2 mm. *Filamenta* 15–17 mm., conspicue purpurascens. *Stylus* una cum stigmate 6–11 mm. *Stigma* paullo et regulariter a basi incrassatum. *Fructus* mihi ignotus. Floret Decembri.—BOLIVIA, TARIJA: *Fiebrig* 2440, Tecumilla bei Tarija, alt. 2000 m., Dez. 20, 1903 (G, TYPE and ISOTYPE: US, ISOTYPE). FIG. 40, a–c.

Although known only from one collection and at flowering time, this species should be easily recognized by its dense covering of very small recurved prickles, the only such case known to me in this genus. The filaments of the stamens are also longer than in any other species of *Thalictrum*. This species shows some relationship with *T. Venturii*, but its position is dubious. Both of these species have perfect flowers, obtuse or truncate anthers and somewhat clavate stigmas.

41. *T. GALEOTTII* Lecoyer, Bull. Soc. Bot. Belg. **24**: 121, 1885. *Planta* omnino glabra altitudinis ignotae, verosimiliter metralis vel brevior. *Flores* forsan omnes perfecti. *Sepala* 3.5–4 mm. longa. *Antherae* 1.2–2.0 mm., oblongo-lanceolatae, in apice truncatae, vel acumine 0.1 mm. *Filamenta* 4–5 mm. *Stylus* una cum stigmate 3–4 mm. *Carpella* matura subsessilia vel sessilia, ca. 3.5 mm. longa, ca. 1.5 mm. lata, *nervis* lateralibus parum ramosis nec undulatis nec gibbosis, nervo dorsali fere recto, ventrali convexo. Tempus florendi ignotum.—MEXICO, VERA CRUZ: *Galeotti* 4541, pic d'Orizaba, fl. blanches, alt. 10,000 p., juin–oct., 1842 (syntype at the Conservatoire Botanique de Genève; F, photograph of this syntype; G, syntype). FIG. 41, a–c.

Naturally, I have not seen the syntype in Switzerland, but I cannot find anything which matches either the photograph or the syntype at hand. The other syntype is no. 4570 from Xalapa by the same collector. Judging from Lecoyer's drawing, which naturally was made from one of those syntypes, and the photo-

graph at hand, the fruit resembles pretty much that of what we are calling *T. Hernandezii* Tausch, but it is much smaller. The anthers and stigmas also rank amongst the smallest in that section of the genus.

42. *T. Hintonii*, sp. nov. *Planta* omnino glabra 40–120 cm., *radicibus* fibrosis. *Stipulae* parum dilatatae. *Foliolae* fere orbiculares, basi cordatae, apice trilobatae, lobis rotundis mucronulatis, nonnunquam figura *Hepaticae americanae*, variables tamen. *Inflorescentia* 1–3 dm. longa, plus minusve secunda, *pedunculis* vel rectis vel parum recurvatis. *Flores* non satis notae, *sepalis* tamen ca. 4.5 mm. longis, *antheris* ca. 5 mm., *acuminibus* ca. 1.0 mm. *Carpella* matura fere orbicularia vel semi-ovata, 4.5–5.5 mm. longa, *stipite* 0.1 mm., ventre ca. 4 mm. longo 2.0–3.2 mm. lato, *nervis* parum ramosis nec gibbosis, nervo dorsali recto vel vario modo convexo, ventrali convexiore quam dorsali. Floret tempore mihi ignoto.—MEXICO, MEXICO: *Hinton 6743*, Temascaltepec district, Acatitlán, in the water, Oct. 12, 1934 (US, TYPE; F, G, M, NY, ISOTYPES). GUATEMALA, QUEZALTENANGO: *Standley 67,837*, southwest of San Martín, Chile Verde, Cumbre de Tuilacán, sandy *Alnus* forest, alt. about 2400 m., March 8, 1939 (F). COSTA RICA: *Standley 35,247*, near the Finca del Volcán de Turrialba, southern slope of Volcán de Turrialba, wet thicket, herb 3–4 ft., alt. about 2000 to 2400 m., Feb. 22, 1924 (US). FIG. 42.

Dedicated to the late G. B. HINTON whose abundant and well prepared Mexican specimens form a large proportion of and are among the best of the material at hand.

43. *T. decipiens*, sp. nov. *Planta* omnino glabra, 4–15 dm., plus minusve glauca, *radice* forsan tuberosa et solitaria. *Inflorescentia* saepius foliosissima. *Pedunculi* sub fructum recurvati. *Sepala* 3–7 mm. longa, elliptica vel orbicularia. *Filamenta* 6–10 mm. *Antherae* 2.5–5.0 mm., *acumine* 0.5–1.0 mm. *Stylus* una cum stigmatibus 4–8 mm. *Carpella* matura obovata vel semiobovata, 6–9 mm. longa, *stipite* 0.5–1.5, ventre 3.5–6.5 mm. longo, 2–3 mm. lato, *nervis* vel simplicibus vel ramosis anastomosantibusque nec gibbosis, nervo dorsali fere recto vel plus minusve convexo, ventrali convexiore quam dorsali, *rostro* nonnunquam recto saepius tamen ad tergum deflexo. In Peruvia floret a Novembri ad Januarium, in Bolivia Novembri et Decembri et in Argentina a Septembri ad Decembrem.—PERU: *Soukup 140* (F); *Ball*, ex saxosis Andium, juxta pagum Chicla, 12–13,000 p. s. m., apr. 21–23, 1882 (NY). JUNIN: *Killip & Smith 22,125*, near Huancayo, open rocky hillside, herb to 5 ft., alt. 3300–3500 m., Apr. 26, 27, May, 25, 1929 (F, NY, US); *Kalenborn 94*, vicinity of Oroya, among rocks, alt. 10–17,000 ft., 1918–1919.

(M, NY, US). LIMA: *Killip & Smith 21,753*, Rio Blanco, open hillside, herb 2-4 ft., alt. 3000-3500 m., Apr. 15-17, 1929 (NY, US); idem *21,752*, herb 1-2 ft. (F, NY, US). PAUCARTAMBO: *Herrera 1047a*, Hacienda Churu, alt. 3500 m., Jan., 1926 (US, TYPE; F, G, NY, ISOTYPES). CUZCO: *Pennell 13,540*, Quiquijana, grassy wayside, herb, alt. 3220 m., Apr. 23, 1925 (ANS, F); *Soukup 40*, Urubamba, entrada al valle Lares, Jan. 3, 1936 (F); *Vargas 702*, Hda Urco, alt. 2940 m., 1938 (F); *Herrera 829*, Sazaihuamán, hills, alt. 3200-3600 m., Dec., 1928 (F); *Soukup 254*, near Puno, alt. 4000 m., Jan., 1936 (F). BOLIVIA: *Kuntze*, alt. 3600 m., Apr. 1-4, 1892 (NY). COCHABAMBA: *Steinbach 8799*, valle de Cochabamba, alt. 2600 m., 27 Dez., 1928 (ANS). LA PAZ: *Buchtien 6239*, Cotaña am Illímani, an Wassergräben, alt. 2500 m., Nov., 1911 (F, US); *Bang 1314*, vic. Sorata, 1892 (ANS, F, G, NY, US); *Rusby 501*, Sorata, alt. 10,000 ft., 1886 (ANS, G, M, US). ARGENTINA, SALTA: *Eyerdam & Beetle 22,631*, 14 km. west of Manuela Pedraza, Tartagal river, moist sand, stream-bank, semi-shade, perennial herb 1-1.5 m., alt. 900 m., Oct. 26, 1938 (G). [N. B. This specimen is the only one complete with underground system, a tuber about 3 inches long.] TUCUMÁN: *Venturi 930*, dept. Tafi, Yerba Buena, en una quebrada con agua, altura de la planta 1 m., flor amarilla, alt. 700 m., Sept. 24, 1920 (F, M, US); *Venturi 3995*, dept. Chichigasta, Estancia Las Pavas, en los prados, flor amarilla, alt. 1700 m., Dic. 11, 1926 [or 1925?] (G, US); *Job 1425*, Clavillo de Aconquija, flor verde, alt. 2800 m., 1937 (NY). CATAMARCA: *Jørgensen 1304*, El Candado, alt. 2700 m., Oct. 2, 1916 (G, M). CÓRDOBA: *Hieronymus*, am Ufer des Rio Primero bei Córdoba, Nov. 17, 1877 (F, US); *Kurtz 2707*, Córdoba, Rio I Cerro del Pueblo, Nov. 29-30, 1885 (NY); *Job 429*, La Falda, Cerro El Charrito, alt. 950 m., Jan., 1936 (US); *Kurtz 342*, San Virente, in umbrosis humidis frequens, Oct. 11, 1884 (NY); *Burkart 7193*, La Reducción, Córdoba, orilla de arroyos, hasta 2 m. de altura, Dec. 27, 1935 (G, US). FIG. 43, a and b.

This species is rather heterogenous but the herbarium material, although abundant, is rather unsatisfactory; most collections at hand are either unicates or made up of duplicates collected at different dates and localities; of a hundred or so herbarium sheets, only one had the underground system and even so it was damaged. Further segregations might well be possible, although I attempted it many times unsuccessfully.

44. *T. viridulum*, sp. nov. *Planta* viridula omnino glabra nullo modo glauca. *Folia* caulinarum perfecte 5-ternata, *petiolulis* rectis. *Flores* polygamo-monoici, plurimi perfecti, pauci masculi. *Sepala* viridula ca. 4 mm. longa. *Antherae* acumen 0.5-1.0 mm.

Stylus una cum stigmatē 8–10 mm. *Carpella* matura nullo modo gibbosa, ca. 7 mm. longo, *stipite* 0.7–1.0 mm., ventre 5.0–5.5 mm. longo, 3.0–3.2 mm. lato, *nervis* lateralibus plus minusve ramosis anastomosantibusque, nervo dorsali basi parum concavo, apice fere recto, ventrali convexo, *rostro* ad ventrum deflexo. An floret Junio et Julio?—PANAMA, CHIRIQUÍ: *Seibert 204*, valley of the upper Rio Chiriquí Viejo, vicinity of Monte Lirio, growing in rocky gorge, 1–1.5 m. tall, fls. green, styles and stamens pinkish-lavender, alt. 1300–1900 m., June 27–July 13, 1935 (NY, TYPE; G, N-ND, ISOTYPES). FIG. 44.

45. T. PANAMENSE Standley, Field Mus. Nat. Hist. Pub. Bot. 22: 19, 1940. *Planta* 6–12 dm., *caule* ramis petiolisque plus minusve glaucis, omnino pubescens. *Pubescentia* e pilis capitatis translucidis. *Folia* caulinarum 4–5-ternata. *Stylus* una cum stigmatē ca. 8 mm. *Carpella* matura sigmoidea nec gibbosa, ca. 6.5 mm. longa, *stipite* ca. 1 mm. ventre ca. 4.5 mm. longo, 2.0–2.2 mm. lato, *nervis* lateralibus simplicibus vel parum ramosis, nervo dorsali baso concavo, apicali convexo, ventrali convexiore quam dorsali, *rostro* ad ventrum deflexo. An floret Junio?—PANAMA, CHIRIQUÍ: *Davidson 791*, Boquete, flowers greenish, 2 to 4 ft. high, alt. 4500 ft., June 26, 1938 (F, TYPE). FIG. 45.

46. T. **Macbrideanum**, sp. nov. *Planta* elata omnino glabra ad 12 dm. attingens et verosimiliter arcuans. *Caulis* subteres. *Folia* inflorescentiae estipellulata 3–4-ternata. *Inflorescentia* ampla paniculata (an secunda?), *ramis* divaricantibus incurvatis foliosis. *Pedunculi* 2–3 cm. ad aetatem florendi, 4–5 cm. et parum curvati cum fructus permatuerunt, nec sub receptaculum reflexi. *Flores* perfecti cum *staminibus* 16–20 et *pistillis* 3–6. *Sepala* quatuor, late ovalia, 5.0–6.5 mm. longa. *Stamina* filamentum 6–8 mm., *antheris* 2.5 mm. oblongo-lanceolatis, *mucrone* 0.3–1.2 mm. longo. *Stylus* una cum stigmatē 12–15 mm. nonnunquam persistens. *Carpella* matura valde compressa, fere laminaria, semi-orbicularia, nervosa, nec gibbosa, *stipite* ca. 2 mm., ventre ca. 4.5 mm. longo, ca. 2.5 mm. lato, *nervo* ventrali semi-circulari, dorsali subrecto, lateralibus conspicuis rugosis curvatis nec ramosis nec sinuosis, *rostro* ad tergum deflexo. Floret Junio.—PERU: *Macbride 4466*, Tambo de Vaca, June 10–24, 1923, in patches, to 4 ft. high, pistils purple, anthers yellow, alt. about 13,000 ft. (G, TYPE: F, NY, US, ISOTYPES). FIG. 46, a–d.

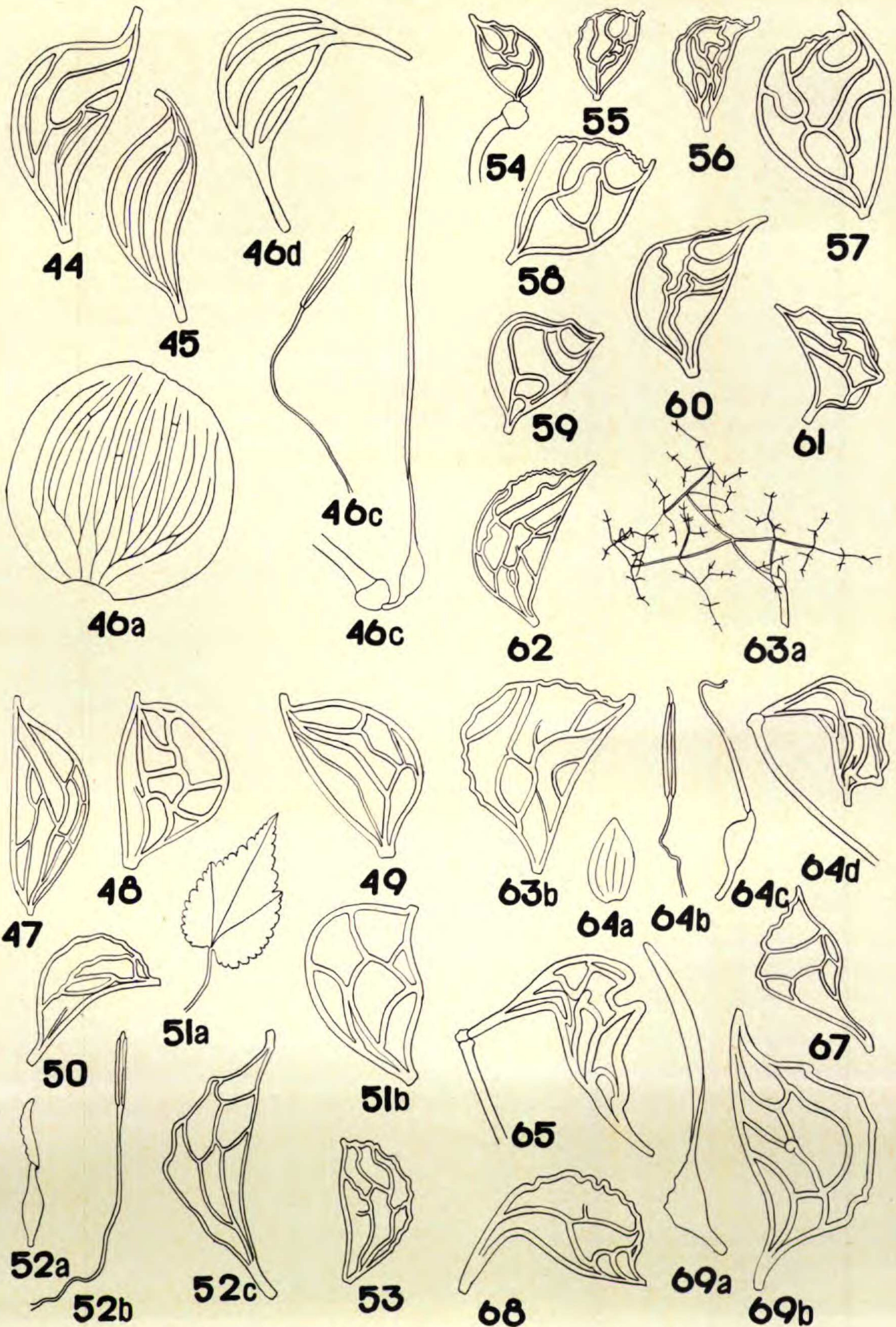
The type specimen is made up of three fragments evidently homogeneous, one with mature fruits, the second with half-open flowers, the third one larger, with flowers in full bloom. For this unusually fine herbarium specimen, we are thankful to the collector, J. FRANCIS MACBRIDE, and it is a pleasure to dedicate to him this new species. The length of the usually persistent

style sets this species apart from any other *Thalictrum* we know of. And before the stamens reach the length of the sepals, the style is already full grown.

47. *T. Deamii*, sp. nov. *Planta* omnino glabra. *Sepala* viridula ca. 25 mm. longa. *Filamenta* ca. 5 mm. *Antherae* ca. 4 mm., acumine ca. 0.5 mm. *Stylus* una cum stigmate 8.5–10.5 mm. *Carpella* matura ovato-lanceolata, 6.5–8.0 mm. longa, *stipite* usque ad 0.8 mm., ventre 6–7 mm. longo, ca. 2.5 mm. lato, *nervis* rugosissimis valde anastomosantibus parum undulatis nec tamen gibbosis, nervo dorsali fere recto vel parum convexo, ventrali convexiore quam dorsali. Tempus florendi ignotum.—MEXICO, TAMAULIPAS: *von Rozyński 558*, Sierra near San Lucas, Jamauve, July, 1932 (F, US). NUEVO LEÓN: *Kenoyer 120*, Monterrey, field, Sept. 18, 1937 (F). SAN LUIS POTOSÍ: *Pringle 5071*, Las Canoas, June 23, 1891 (G, TYPE). FIG. 47.

Dedicated to a botanist whom we admire very much for his patient and painstaking work, namely his herbarium specimens and his publications on the flora of Indiana. His *Flora of Indiana* contains the best key that was ever published to separate three very litigious species: *T. dasycarpum* Fisch. & Lall., *T. polygamum* Muhl. and *T. revolutum* DC.

48. *T. GRANDIFOLIUM* Watson, Proc. Am. Acad. **23**: 267, 1888, nec *T. grandifolium* Rose, Contrib. U. S. Nat. Herb. **5**: 143, 1897. *T. grandiflorum* Watson ex Rose, Contrib. U. S. Nat. Herb. **5**: 188, 1899, nec *T. grandiflorum* Maxim., Act. Hort. Petrop. **11**: 11, 1889, nec *T. grandiflorum* Rose, Contrib. U. S. Nat. Herb. **5**: 188, 1899.—*Planta* verosimiliter semimetralis ad sesquimetralis, saepius plus minusve glauca, omnino glabra nisi in *foliis* infernis, tum pubescentia sparsa est e pilis crassiusculis brevibus opacis et coloratis. *Foliolae* variabiles ad 5 cm. longae et latae. *Petioli* foliorum caulinarum saepius 2–6 cm., dilatatione petiolari exclusa. *Pedunculus* fructuum ad 6 cm. extendet, in primis parum incurvatus, in apicem valde recurvatus. *Flores* omnes perfecti (?) vel plurimi perfecti pauci masculi. *Sepala* 3–5 mm. longa. *Filamenta* 4.0–5.5 mm. *Antherae* 3.5–5.0 mm., acumine 0.5–1.5 mm. *Stylus* una cum stigmate 5–10 mm. *Carpella* matura substipitata, apice acuto vel saepius rotundo vel etiam prope rostrum retuso, 4.5–5.0 mm. longa, ventre ca. 4 mm. longo, 2.5–3.2 mm. lato, *nervis* valde ramosis anastomosantibusque nervo dorsali aliquid convexo, ventrali convexiore quam dorsali. Floret a Junio per Julium ad Augustum.—MEXICO, CHIHUAHUA: *Pringle 1513*, Sierra Madre, under cliffs, Oct. 17, 1887 (G, TYPE: ANS, CA, F, M, NY, UC, US, ISOTYPES); *Nelson 6007*, in the Sierra Madre, June 21–July 29, 1899 (G, US); *Hartman 751*,



DETAILS OF FLOWERS OR FRUITS OF *THALICTRUM*, all $\times 4$, except 51a and 63a, these $\times \frac{1}{5}$.

(For explanation see end of paper.)

Pilares, Strawberry Valley, Sept. 22, 1891 (G); *M. E. Jones*, Soldier Canyon, alt. 6500 ft., Sept. 16, 1903 (CA, F, M, NY, UC, US); *LeSueur 1323*, Rio Negro, Aug. 29, 1937 (F); *Townsend & Barber 47*, near Colonia Garcia, alt. 7500 ft., June 23, 1899 (F, G, M, NY, US). DURANGO: *E. Palmer 357*, Durango and vicinity, Apr. to Nov., 1896 (F, G, M, NY, UC, US). NUEVO LEÓN: *C. H. & M. T. Mueller 899*, Cieneguillas to Puerto Santa Ana, about 15 miles SW of Galeana, commonly scattered in dense moist wood, flower straw with lavender stamens, June 28, 1934 (F). SAN LUIS POTOSÍ: *Pennell 17,910*, Las Canoas, rocky limestone hill, flowers purplish, alt. 100–1200 m., Aug. 6–7, 1934 (ANS). FIG. 48.

49. *T. HERNANDEZII* Tausch ex Presl, Rel. Haenk. **2**: 69, 1835. *T. puberulum* Aschen ex Lecoyer, Bull. Soc. Bot. Belg. **24**: 306, 1885, nomen subnudum cum synonymis editum. *Planta omnino glabra viridula nec glauca, metrum approximans. Flores polygamo-monoici, pauci masculi, alii perfecti. Sepala 3–4 mm. longa, nonnunquam viridula. Filamenta ca. 5 mm. Antherae 3–3.5 mm., acumine circa millimetrali. Stylus una cum stigmatē 8.5–10.0 mm. Carpella matura glauca semiovata ca. 5 mm. longa, stipite 0.2–0.5 mm., ventre ca. 4.5 mm. longo, 3.3–3.6 mm. lato, nervis plus minusve ramosis anastomosantibusque, nervo dorsali paululo convexo, ventrali conspicue convexiore quam dorsali. Floret Julio.*—MEXICO, GUERRERO: *R. Q. Abbott 145*, Taxco, rank-growing, in damp or shady places, 1 meter or so tall, July 18, 1936 (G); idem, *237* and *238*, July 12, 1937 (G). FIG. 49.

The application of this specific name is not quite certain. It might well apply to *T. gibbosum* Lec. I have not seen the type, which is at Prague in the herbarium of the Museum. Lecoyer had not seen it either, but Dr. M. Willkomm studied it for him. The original description refers to a glabrous plant two feet high, from western Mexico, with ternate leaves, dioecious flowers and the nerves of the fruits oblique and uneven. There is no such *Thalictrum* amongst the thousands of specimens at hand. If the dioecious character is discarded, then it may be either *T. gibbosum* Lec. or the species just described above. Presumably Lecoyer had studied *T. Hernandezii* Tausch carefully enough to ascertain that it was not the same thing as his own *T. gibbosum*. Sensus Lecoyer, *T. Hernandezii* is what I am calling *T. Nelsonii* or *T. strigillosum*. I cannot agree with his interpretation, for Tausch very clearly says: "Caulis . . . una cum foliis floribusque glaber".

Subsectio **Gibbosa**, subsect. nov. Sect. *Camptogastrum*, d. *Podocarpa* PRANTL, Nat. Pfl., **3**, 2: 66, 1888. *Plantae* glabrae vel pubescentes. *Ovaria* 10 vel pauciora in flore. *Carpella* matura compressa nervis ramosis anastomosantibusque saepius sinuosis et reticulatis, *nervo* ventrali, licet dorsali lateralibusque, gibbosis. Species typica *Thalictrum gibbosum* Lec. sit.

50. *T. PACHUENSE* Rose, Contrib. U. S. Nat. Herb. **5**: 188, 1899. *Planta* 20–50 cm., *radicibus* fibrosis, nonnullis istorum parum in locis incrassatis. *Caulis* basis subterraneus directus aphyllus, ad transitionem saepius ramosus et *foliis* numerosis munitus. *Caulis* acrius nonnunquam aphyllus, frequentius tamen cum folio caulinari solitario et cum 1–3 foliis inflorescentiae. *Pubescentia* deest, nisi interdum inferne, si adest e pilis incrassatis brevibus coloratis et in fructibus e pilis capitatis minutissimis translucidis. *Foliolae* 1 cm. longae vel minores. *Inflorescentia* reducta. *Pedunculi*, fructibus maturis, paululum incurvati et sub receptaculo maxime recurvati. *Flores* omnes perfecti purpurascens. *Sepala* 3–4 mm. longa. *Filamenta* 5–6 mm. *Antherae* 2.5–4.0 mm., *acumine* 0.2–0.5 mm. *Stylus* una cum stigmate 5–9 mm. *Carpella* matura 4–5 mm. longa, oblique clavata, interdum parum gibbosa, *stipite* 0.5–1.5 mm., ventre 3.4–3.6 mm. longo, 1.6–2.0 mm. lato, *nervis* undulatis ramosis anastomosantibusque, *nervo* dorsali concavo. Floret Julio Augustoque.—MEXICO, HIDALGO: *Pringle* 6880, Sierra de Pachuca, open woods, alt. 9000 ft., July 16, 1898 (US, TYPE; ANS, F, G, M, NY, UC, US, ISOTYPES); *Pringle* 9678, Sierra de Pachuca, alt. 9500 ft., Aug. 22, 1902 (F, G, M, NY, US); *Rose & Hay* 5585, Sierra de Pachuca, July 21 & 22, 1901 (US). Type not seen, stored away. FIG. 50.

51. *T. STANDLEYI* Steyermark, Field Mus. Nat. Hist. Pub. Bot. **22**: 229, 1940. *Planta* 1–3 m. pubescens nisi in floribus et in foliolis supernis. *Pubescentia* e pilis saepius brunneis interdum translucidis, aliis uniseriatis aliis stellatis stipitatisque. *Folia* 2–4-ternata. *Foliolae* profunde cordatae, apice acuminatae, saepius parum asymmetricae, raro trilobatae, per marginem totam dentatae, dentibus serratis apice rotundis mucronulatis, sinibus acutissimis. *Pedunculi* variis modis recurvati. *Flores* polygamo-monoici, alii perfecti, alii masculi. *Sepala* oblonga 6.0–7.5 mm. longa. *Filamenta* 7–8 mm. *Antherae* 4.0–4.5 mm., *acumine* 0.6–0.8 mm. *Stylus* una cum stigmate 9–11 mm. *Carpella* matura viridia carnosae obovata 4.5–5.5 mm. longa, *stipite* 0.2–1.0 mm., ventre 4.0–4.5 mm. longo, 2.5–3.0 mm. lato, *nervis* obscuris copiose anastomosantibus, *nervo* dorsali ad basem et superne paululum concavo, ad medias parum convexo, ventrali valde convexo. *Rostrum* dorsale ad superas insertum et deflexum ad tergum. Floret Februario et Martio.—GUATEMALA, SAN MARCOS: *Standley* 86,335, Barranco Eminencia, road be-

tween San Marcos and San Raphael Pie de la Cuesta, in upper part of the barranco between Finca La Lucha et Buena Vista, wet wooded quebrada, herb 1 m. tall, rare, alt. 2500–2700 m., Feb. 6, 1941 (F); *Steyermark 26,358*, Río Vega, near San Rafael and Guatemala-Mexico boundary, Volcán Tacaná, herb 5–8 ft. tall, leaves dull green above, grass-green beneath and rugose, sepals green, at base purplish, anthers pale yellow turning purplish, filaments light green, style purple, sepals erect, anthers expanding first, the pistils later, flowers polygamo-monoecious, stem-nodes purplish, alt. 2500–3000 m., Feb. 20, 1940 (F, TYPE); *Steyermark 37,067*, trail between Finca el Porvenir and San Sebastián, Volcán Tajumulco, alt. 1300–1400 m., March 1, 1940 (F, paratype); *Steyermark 36,821*, between town of Tajumulco and Tecutla (9 miles south and west of Tajumulco), northwestern slopes of Volcán Tajumulco, shaded thickets along quebrada, near top of barranco, herb 5–8 ft. tall, leaves membranaceous, rich green above, gray beneath, alt. 1800–2500 m., Feb. 27, 1940 (F, paratype). QUEZALTENANGO: *Standley 66,346*, mountains southeast of Palestina, damp dense forest, herb 5 ft., alt. about 2700 m., Feb. 22, 1939 (F, paratype); *Standley 66,338*, mountains southeast of Palestina, damp dense forest, tall coarse herb, alt. about 2700 m., Feb. 22, 1939 (F, paratypes); *Standley 84,240*, mountains southeast of Palestina, on old road to San Juan Ostuncalco, damp sandy hillside forest, herb 1–2 m. tall, common, alt. 2550–2850 m., Jan. 21, 1941 (F); *idem 84,253* (F); *Standley 84,271*, mountains southeast of Palestina, on old road to San Juan Ostuncalco, damp sandy hillside forest, herb 1–1.5 m. tall, Jan. 21, 1941 (F). FIG. 51, a and b.

52. *T. JOHNSTONII* Standley & Steyermark, Field Mus. Nat. Hist. Pub. Bot. **22**: 229, 1940. *Planta* omnino glabra, 6 dm. alta vel altior. *Florum* plurimi perfecti, pauci masculi. *Sepala* 2.5–4.5 mm. longa. *Filamenta* 7–10 mm. *Antherae* 1.2–3.5 mm., *acumine* 0–0.2 mm. *Stylus* una cum stigmatibus anguste bialato 2–4 mm. *Carpella* matura ignota, fere matura 6–7 mm. longa, *stipite* ca. 1 mm., *nervis* lateralibus valde reticulatis, nervo dorsali paululum concavo, ventrali gibboso. Floret Majo et Junio. GUATEMALA, HUEHUETENANGO: C. & E. Seler 2935, Facaltenango, 21 juni 1896 (G, NY, US). EL QUICHÉ: Heyde & Lux 2977, Nebaj, alt. 6000 p., maj. 1892 (G, NY, US). SAN MARCOS: Salas 368, “Culantro de monte”, San Cristobal Cucho, alt. 1920 m., June, 1923 (US). CHIMALTENANGO: J. R. Johnston 1643, Desconsuelo, June 20, 1940 (F, TYPE). FIG. 52, a–c.

53. *T. LANATUM* Lecoyer, Bull. Soc. Bot. Belg. **24**: 122, 1885. *Planta* omnino pubescens nisi per foliolas supernas et in floribus. *Pubescentia* e pilis 1–4 mm. flexuosis acicularibus opacis, densissimis in caule. *Carpellorum* tamen pubescentia e pilis capitatis translucidis sparsis. *Radix* fibrosa. *Flores* polygamo-monoici,

alii perfecti, alii masculi. *Sepala* 3.2–4.5 mm. *Filamenta* 3.5–6.0 mm. *Antherae* 2.5–4.0 mm., *acumine* 0.5–0.7 mm. *Stylus* una stigmatate 3.5–8.0 mm. *Carpella* matura sessilia gibbosa ca. 3 mm. longa, ca. 1.8 mm. lata, *nervis* sinuosis reticulatisque, nervo dorsali fere recto vel concavo. Floret Majo et Junio.—MEXICO, PUEBLA: *Purpus* 2714, Cerro de Gentile, southwest Puebla, rocks, Aug., 1907 (UC). OAXACA: *Purpus* 2714♂, vicinity of San Luis Tultitlanapa, Las Naranjos, May, 1908 (F, G, M, NY, UC, US); *Galeotti* 4575, Oaxaca (syntype in the Paris Herbarium; F, photograph of this syntype); *Conzatti & Gonzalez* 1208, Huauchilla, alt. 2500 m., June 1901 (G); *Conzatti* 1795, Lomerios de San Felipe, Oaxaca, alt. 1700 m., junio 9, 1907 (F). FIG. 53.

The pubescence is longer than in any other species of *Thalictrum*. The fruits of *T. lanatum*, *T. parvifructum* and *T. Pennellii* are the smallest in this section of the genus. Other syntypes are *Galeotti* 4548 pro parte, from Sola, and *Andrieux* 1834, from Mitla. Nothing of those two has been seen by me.

54. *T. Pennellii*, sp. nov. *Planta* verosimiliter submetralis, caule basi, foliolis superne et floribus exceptis, pubescens. *Pubescentia* translucida minutissima e pilis capitatis per foliolarum paginam inferiorem, alio translucida densa e pilis uniseriatis. *Radices* ignotae. *Pedicelli* directi centimetrales, attamen sub receptaculum recurvati. *Carpella* matura glabra, subsessilia refracta ovata, ca. 3 mm. longa, ca. 1.8 mm. lata, apice acuto-rostrata, *nervis* lateralibus ramosis et anastomosantibus, nervo dorsali convexo, ventrali convexiore quam dorsali et saepius gibboso quidem. Tempus florendi ignotum, item flores.—MEXICO, DURANGO: *Pennell* 18,505, El Salto, Aserraderos, rocky, andesitic, pineland canyon, alt. 2500–2530 m., Aug. 31, 1934 (ANS, TYPE). FIG. 54.

Dedicated to Dr. FRANCIS W. PENNELL of the Academy of Natural Sciences of Philadelphia.

55. *T. parvifructum*, sp. nov. *Planta* 3–5 dm., pubescens saepius per foliolas inferne, nunquam superne, interdum aliis locis. *Pubescentia* pilorum crassiusculorum opacorum coloratorum nonnunquam cum pilis capitatis translucidis intermixtorum. *Flores* polygamo-monoici. *Sepala* elliptica ca. 3 mm. longa. *Filamenta* ca. 3 mm. *Antherae* 2.5–3.0 mm., *acumine* 0.2–0.4 mm. *Stylus* una cum stigmatate 3.0–5.5 mm. *Carpella* matura rostrata glabra obovata subsessilia 2.7–3.0 mm. longa, 1.6–1.8 mm. lata, *nervis* lateralibus ramosis undulatis anastomosantibusque, nervo dorsali convexo, ventrali convexiore quam dorsali et gibboso. Floret Julii mense.—MEXICO, SONORA: *Pennell*

19,555, ridge south of Arroyo Gochico, east of San Bernardo, base of cliff near summit, alt. 1050–1150 m., Aug. 5–9, 1935 (ANS, TYPE); *Gentry 1463*, Rio Mayo, Bakachaka, upper Sonorian, riparian, inconspicuous along the stream bank, a tolerant herb, July 5, 1935 (ANS, F, G, M, NY, UC, US). FIG. 55.

56. *T. strigillosum* Hemsley, *Diag. Pl. Nov.* 1, 1878. *T. papillosum* Rose, *Contrib. U. S. Nat. Herb.* 5: 188, 1899. *T. jalapense* Rose, *Contrib. U. S. Nat. Herb.* 8: 28, 1903. *Planta nonnunquam omnino pubescens 2–10 dm. Pubescentia varia variabilisque semper tamen densa inferne in foliis. Pubescentia caulinaris, si adest, vel e pilis capitatis, vel e pilis millimetralibus flexuosis acicularibus opacis, vel iisdem intermixtis. Pubescentia foliolarum superne e pilis capitatis cum adest, inferne e pilis crassiusculis brevibus coloratis densissimis, nonnunquam pilis capitatis intermixtis. Pubescentia carpellorum vel deest vel e pilis capitatis translucidis. Radices fibrosae. Pedicelli parum incurvati, sub fructum valde recurvati. Flores plurimi perfecti pauci masculi. Sepala 3.0–6.5 mm. longa. Filamenta 4.5–6.0 mm. Antherae 2.5–4.0 mm., acumine 0.4–0.5 mm. Stylus una cum stigmatibus 5–13 mm. Carpella matura 3.5–4.5 mm. longa, stipite 0.3–1.0 mm., ventre 2.5–4.0 mm. longo, 1.6–2.2 mm. lato, nervis gibbosis reticulatis, nervo dorsali fere recto, vel parum convexo, saepius tamen paululum concavo. Floret Majo, Junio, Julio et Augusto.—MEXICO, COAHUILA: *E. Palmer*, 9, Lerios, Feb. to Oct. 1880 (ANS, US); *Gregg 404*, near Saltillo, San Antonio, Sept. 2, 1848 (M). SAN LUIS POTOSÍ: *Purpus 5361*, Minas de San Rafael, May, 1911 (F, M, NY, UC). ZACATECAS: *Rose 2658*, near Monte Escobede, Aug. 27, 1897 (US, type of *T. papillosum*; G, US, isotypes). VERA CRUZ: *Rose & Hay 5674*, Mount Orizaba, July 25 and 26, 1901 (NY, US); *Rose & Hay 6188*, near Jalapa, Aug. 17, 1901 (US, type of *T. jalapense*; G, US, isotypes). HIDALGO: *Coulter 652*, Zimapan (G); *Purpus*, Ixmiquilpan, Sierra de la Mesa, July, 1905 (UC); *Clokey 1855*, Real del Monte, bank of stream, Oct. 1, 1910 (M, C-UC); *Pringle 6929*, Sierra de Pachuca, alt. 9000 ft., July 28, 1898 (ANS, F, G, M, NY, UC, US). MEXICO and DISTRITO FEDERAL: *Rose, Painter & Rose 8440*, Hacienda de la Encarnacion, July 7, 1905 (G, NY, US); *Rose & Painter 7185*, near Cima, Sept. 19, 1903 (G, NY, US); *Pringle 6422*, valley of Mexico, Pedrigal (lava beds), 1–3 ft., alt. 7800 ft., Aug., 1896 (ANS, F, G, M, NY, UC, US); *Schaffner 11*, vallée de Mexico, 1870–1880 (G, NY); *Mexia 2685*, Monte de Rio Frio, kilometer 49, road from Mexico City to Puebla, pine forest on slopes, in shade of thick pines, suffrutescent, spreading, up to 1 m., flowers yellowish, alt. 4000 m., July 31, 1929 (F, M, NY, UC); *Bourgeau 276*, vallée de Mexico, juin, 1865–66 (G, US, syntypes of *T. strigillosum*). MICHOACÁN: *Arsène 5677*, vicinity of Morelia, alt. 2800 m., 1910 (US).*

The type of this species has not been selected. Other syntypes, not seen, are *Andrieux 546* and *Schaffner's* collection from Tacubaya. The types of the two species given as synonyms have not been seen either, but isotypes of both were available for study. FIG. 56.

Except as to the type of pubescence and the size of the fruit, there is not much difference between *T. strigillosum* Hemsl. and *T. lanatum* Lec. They have, however, different ranges.

57. *T. laeteviride*, sp. nov. *Planta* 3–12 dm., omnino pubescens nisi in foliolis superne et in floribus. *Pubescentia* e pilis capitatis translucidis interdum tamen intermixtis in foliolis infernis cum pilis opacis brevibus capitatis. *Radices* fibrosae. *Pedunculi* parum incurvati sub fructum valde recurvatum. *Sepala* viridula ca. 3 mm. longa. *Antherae* 2–3 mm., *acumine* 0.3–0.4 mm. *Stylus* una stigmatate 6–10 mm. *Carpella* matura sessilia 5.0–5.5 mm. longa, 3.5–3.8 mm. lata, *nervis* ramosis et reticulatis, *nervo* dorsali convexo, *ventrali* gibboso convexiore quam dorsali, *rostro* ad frontem deflexo. Floret Julio et Augusto.—MEXICO, COAHUILA: *Johnston & Muller 463*, Sierra del Pino, vicinity of La Noria, open valley with scrub oaks and scattered pines, shaded arroyo-banks, 1–4 ft. tall, Aug. 20–26, 1940 (G, TYPE); *Stanford, Retherford & Northcraft 387*, lat. 25° 3', long. 101° 18', in arroyo on south slope of mountain, 24 kilo. northwest of Fraile, great variation of vegetation with many vines and other types of more southerly plants, plant 18–24 inches tall, alt. 2900 m., July 15, 1941 (G, M); *R. M. Stewart 2291*, north of La Noria, high central parts of the calcareous Sierra del Pino, north of high eastern ridges, frequent on open sunny slopes, becoming 8 dm. tall, Aug. 26, 1942 (G). FIG. 57.

58. *T. LASIOSTYLUM* Presl, Rel. Haenk. 2: 70, 1835. *Planta* 40–65 cm. glabra nisi in foliolis inferne. *Pubescentia* sparsa e pilis crassiusculis coloratis brevibus. *Radix* ignota. *Flores* verosimiliter polygamo-monoici. *Stylus* una cum stigmatate 5.0–6.5 mm. long. *Carpella* matura 5.0–6.5 mm. longa, *stipite* 0.5–1.0 mm., *ventre* 4–5 mm. longo, 3.0–3.5 mm. lato, *nervis* lateralibus sinuosis reticulatisque, *nervo* dorsali fere recto vel convexo, *ventrali* gibboso et convexiore quam dorsali. *Tempus* florendi mihi ignotum est.—PERU, LIMA: *Macbride & Featherstone 269*, Matucana, perennial among large granite rocks on steep northern canyon slope, about 8000 ft., Apr. 12–May 3, 1922 (F, NY); *Pennell 14,338*, Canta, open rocky slope, herb, alt. 2700–3200 m., June 11–19, 1925 (ANS, F, G). FIG. 58.

Type, not seen, in the herbarium of the Botanical Garden at Prague. Lecoyer assumed this specimen to have been errone-

ously attributed to Peru, that it was a Mexican specimen of *T. Hernandezii* Tausch. Indeed he had no other collection of *T. lasiostylum* Presl from Peru and both species are no doubt closely related. But as we have now two other collections it becomes clear that they are probably different enough to be kept specifically segregated.

59. *T. SUBPUBESCENS* Rose, Contrib. U. S. Nat. Herb. 8: 28, 1903. *Planta* submetralis vel sesquimetralis per foliolas inferne pubescens, aliis locis nunc glabra tum pubescens. *Pubescentia* densa e pilis capitatis translucidis. *Flores* polygamo-monoici, plurimi perfecti, pauci masculi. *Sepala* 3.8–4.5 mm. longa. *Filamenta* 5–6 mm. *Antherae* 2.8–3.5 mm., *acumine* 0.2–0.4 mm. *Stylus* una cum stigmatē 7–10 mm. *Carpella* matura 4–5 mm. long., 2.3–2.9 mm. lat., *stipite* 0.5 mm. vel breviorē vel deente, *nervis* lateralibus ramosis reticulatisque, nervo dorsali fere recto vel parum convexo, ventrali gibboso convexiore quam dorsali. Floret Julio et Augusto.—MEXICO, MEXICO: *Pringle* 1896, Sierra de las Cruces, moist banks, 3–5 ft., alt. 10,000 ft., Aug. 14, 1896 (US, TYPE; ANS, F, G, M, NY, UC, US, ISOTYPES); *Pringle* 11,917, bluffs of barranca below Ozymba, alt. 8000 ft., Sept. 24, 1904 (F, G, US). FIG. 59.

Type not seen, but there is an abundance of isotypes at hand.

60. *T. PUBIGERUM* Benth, Pl. Hartw., 3: 285, 1857. *T. tomentellum* Robinson & Seaton, Proc. Am. Acad. 28: 103, 1893. *Planta* submetralis vel subbimetralis omnino pubescens. *Pubescentia* e pilis uniseriatis translucidis densissimis. *Radices* fibrosae in locis paululum tuberosae. *Folia* caulinarum petiolis 2–8 cm., dilatatione petiolarum exclusa. *Sepala* 3.7–4.5 mm. longa. *Filamenta* 4.5–6.5 mm. *Antherae* 2.0–3.5 mm., *acumine* 0.5–0.7 mm. *Stylus* una cum stigmatē 5–7 mm. *Carpella* matura pubescentia, 3.5–5.0 mm. longa, 2.0–2.5 mm. lata, *stipite* 0–0.5 mm., *nervis* rugosis sinuosis reticulatisque, nervo dorsali parum convexo, ventrali convexiore quam dorsali. Floret Majo, Junio et Julio.—MEXICO: *T. C. & E. M. Frye* 2640, Laventa, Desierto de los Liones, alt. 3000 m., May 20, 1939 (M, NY, C-UC); *Plunkett* 26, Desert of the Lions, along stream, 3–6 ft. tall, July 8, 1932 (F). JALISCO: *Pringle* 9679, slopes of the barranca of Guadalajara, alt. 5000 ft., July 16, 1902 (F, G, M, NY, US); *Pringle* 2479, hillsides near Guadalajara, June 29, 1889 (ANS, F, G, M, NY, UC, US); *Rose & Painter* 7360, near Guadalajara, Sept. 28, 1903 (US); *Rose & Hough* 4744, near Tequila, July 5 and 6, 1899 (G, NY, UC, US). HIDALGO: *Pringle* 7489, valley near Tula, June 24, 1897 (G). MICHOACAN: *Pringle* 4143, low lands about Lake Patzcuaro, July 15, 1892 (G, type of *T. tomentellum*; ANS, F, M, NY, UC, US, isotypes). FIG. 60.

The TYPE of *T. pubigerum* Benth. is *Hartweg 1591, ad fluviorum margines prope Lagos*. It has not been seen.

61. *T. Conzattii*, sp. nov. *Planta* metralis omnino pubescens, nisi in carpellis. *Pubescentia* e pilis uniseriatis translucidis. *Flores* polygamo-monoici, plurimi perfecti, pauci masculi. *Sepala* 2.8–3.5 mm. longa. *Filamenta* 3.5–4.0 mm. *Antherae* 2.0–3.3 mm., *acumine* 0.3–0.7 mm. *Stylus* una cum stigmate 5.0–6.0 mm. *Carpella* matura glabra 3.5–4.5 mm. longa, *stipite* ca. 0.5 mm., *ventre* 2.9–3.5 mm. longo, 1.8–2.2 mm. lato, *nervo ventrali gibboso*, *lateralibus gibbosioribus et reticulatis*, *dorsali paululum concavo*, vel subrecto. Floret Julio et Augusto.—MEXICO: VERA CRUZ: *Bourgeau 2726*, région d'Orizaba, 17 juillet, 1865–1866 (G); *G. L. Fisher 293*, Orizaba, alt. 4500 m., Aug. 9, 1924 (F, M, US); *Müller*, Orizaba, 1855 (NY); *Mohr*, Huatusco, July, 1857 (US); *Mohr*, Orizaba, in pratis et graminosis, sylvaticis (ANS); *Mohr*, Orizaba, julio, 1857 (US); *Mohr*, Orizaba, in sylvis montanis ad saxas calcares, julio, 1856 (US). MEXICO and DISTRITO FEDERAL: *Hinton 4200*, distr. Temascaltepec, Comunidad, alt. 2480 m., July 6, 1933 (M); *Hinton 3851*, Temascaltepec, Comunidad, by the river, alt. 2480 m., Aug. 5, 1933 (G, NY); *Langman 2509*, ¼ mile s. of Contadero, thickly wooded slopes, July 27, 1940 (ANS). OAXACA: *Conzatti & Gonzalez 314*, Etna, Canada de San Gabriel, alt. 3000 m., Aug. 8, 1897 (G, TYPE; US, ISOTYPE). FIG. 61.

62. *T. sessilifolium*, sp. nov. *Planta* metralis vel altior omnino pubescens. *Pubescentia* e pilis uniseriatis translucidis. *Folia* caulinarum sessilia vel fere sessilia in apice dilatationis petiolaris. *Sepala* 4.2–5.0 mm. *Filamenta* 6.0–7.5 mm. *Antherae* 2.6–6.5 mm., *acumine* 1.0–1.2 mm. *Stylus* una cum stigmate 5–12 mm. *Carpella* matura pubescentia, 5–6 mm. longa, ca. 2.5 mm. lata, *stipite* 0–1 mm., *nervis lateralibus valde reticulatis*, *nervo ventrali gibboso*, *dorsali subrecto vel concavo*. Floret Majo, Junio, Julio et Augusto.—MEXICO, MEXICO: *Harshberger 76*, Salaza, Sierra de las Cruces, alt. 11,000 ft., Aug. 13, 1896 (M, TYPE; ANS, G, NY, US, ISOTYPES). MICHOACAN: *Leavenworth 250*, west of Tancitaro, on edge of arroyo, herb 5–7 ft., alt. 6660 ft., July 15, 1940 (F, M, NY). PUEBLA: *Nicolas*, rancho Posadas, Hacienda Alamos, 1 août, 1909 (F, NY, US); *Arsène & Nicolas 5168*, près Puebla, Hacienda Noria, sur l'Atoyae, alt. 2170 m., 20 mai, 1910 (G, M, NY). FIG. 62.

63. *T. refractum*, sp. nov. *Planta* glabra metralis vel sesquimetralis. *Radices* fibrosae. *Rami petiolorum* paululum incurvati valde divaricati, saepius refracti. *Flores* polygami-monoici, plurimi perfecti, pauci masculi. *Sepala* 2.5–4.5 mm. *Filamenta* ca. 5 mm. *Antherae* 1.8–3.0 mm., *acumine* 0.5–1.0 mm. *Stylus* una cum stigmate 5–10 mm. *Carpella* matura

6.0–6.5 mm., *stipite* 0.5–1.0 mm., ventre 4–5 mm. longo, 3.0–3.2 mm. lato, *nervis* lateralibus sinuosis reticulatisque, nervo dorsali parum concavo, ventrali gibboso valde convexo. Floret a mense Junii usque ad Octobris.—COLOMBIA, CUNDINAMARCA: *Cuatrecasas* 9664, Cordillera Oriental, vertiente oriental, cerca de Machetá, hierba de 1 metro, calis verde blanquecino con venas violáceas, antheras amarillas, alt. 2200 m., June 29, 1940 (US, TYPE); *Pennell* 2398, 2–3 m. sw. of Sibate, fl. purplish-green, alt. 2700–2800 m., Oct. 13–15, 1917 (G, NY, US). FIG. 63, a and b.

64. *T. PENINSULARE* (Brandege) Rose, Contrib. U. S. Nat. Herb. **8**: 28, 1903. *T. vesiculosum* Lec., var. *peninsulare* Brandege, Zoe, **4**: 399, 1894. *Planta* omnino glabra submetralis. *Radices* fibrosae. *Foliolae* membranaceae discolores, saepius trilobatae, basi cuneatae raro rotundae. *Flores* polygamo-monoici. *Sepala* 2.5–3.5 mm. long. *Filamenta* 3–6 mm. *Antherae* 3.0–3.5 mm., *acumine* 0.5–0.8 mm. *Ovarii stipes* 0.5–1.0 mm. *Stylus* una cum stigmatate 5–8 mm. *Carpella* matura gibbosa 4–6 mm. longa, *stipite* 1–3 mm., ventre 3–4 mm. longo, 1.8–2.0 mm. lato, *nervis* lateralibus gibbosis ramosis anastomosantibusque, nervo dorsali basi concavo, superne convexo, nervo ventrali convexo et gibboso. Floret Septembris mense. An etiam Augusti?—MEXICO, BAJA CALIFORNIA: *Brandege*, Saltillo, Sept. 17, 1893 (UC, TYPE and ISOTYPE); *Brandege*, El Taste, Sept. 13, 1893 (G, NY, US, paratypes); *Brandege*, Sierra de San Francisquito, Oct. 18, 1890 (UC); *Brandege*, Sierra de Laguna, Jan. 23, 1890 (UC); *M. E. Jones* 27,027, Laguna Mountains, The Laguna, Sept. 22, 1930 (G, M, NY, UC, US); *Nelson & Goldman* 7470, from La Laguna to El Paraiso, alt. 5000–5800 ft., Jan. 29, 1906 (US). FIG. 64, a–d.

65. *T. GIBBOSUM* Lecoyer, Bull. Soc. Bot. Belg. **24**: 132, 1885. *T. grandifolium* Rose, Contrib. U. S. Nat. Herb. **5**: 143, 1897, nec *T. grandifolium* Watson, Proc. Am. Acad. **23**: 267, 1888; *T. grandiflorum* Rose, Contrib. U. S. Nat. Herb. **5**: 188, 1899; nec Watson ut in Rose, Contrib. U. S. Nat. Herb. **5**: 144, 1897, nec *T. grandiflorum* Maxim., Act. Hort. Petrop. **11**: 11, 1889. *T. obliquum* Rose, Contrib. U. S. Nat. Herb. **8**: 27, 1903. *T. stipitatum* Rose, Contrib. U. S. Nat. Herb. **8**: 28, 1903, nec *T. stipitatum* Rydb., Fl. Rocky Mts. 290, 1918. *Planta* metralis vel trimetralis, omnino glabra, plus minusve glauca. *Radices* fibrosae. *Flores* polygamo-monoici, plurimi perfecti, pauci masculi. *Sepala* 3–5 mm. longa. *Filamenta* 3.5–6.0 mm. longa. *Antherae* 2–5 mm. *Stylus* una cum stigmatate 5–14 mm. *Carpella* matura plus minusve gibbosa, 4–8 mm. longa, *stipite* 0.5–2.0 mm., ventre 4.0–5.5 mm. longo, 2–3 mm. lato, *nervis* ramosis et anastomosantibus, nervo dorsali basi concavo, superne convexo, nervo ventrali gibboso. Floret a Maji mense usque ad Novem-

bris.—MEXICO, MEXICO and DISTRITO FEDERAL: *G. L. Fisher 394*, Amecameca, July 24, 1924 (F, M, US); *Hinton et al. 6412*, dist. Temascaltepec, Crucero, 1.5 m. high, Aug. 28, 1934 (F, G, NY, US); *Hinton 5283*, dist. Temascaltepec, La Labor, oak woods, alt. 2100 m., Nov. 30, 1933 (M); *O. Kuntze 23,655*, Amecameca, alt. 8600 ft., Aug., 1904 (NY). MORELOS: *G. L. Fisher 35,229*, Tepoztlan, alt. 7500 ft., July 14, 1935 (F, NY, US); *Lyonnet 584*, Huizilac, Aug. 1930 (G, M, NY, US); *Rose & Painter 6966*, near Cuernavaca, Sept. 10, 1903 (NY, US); *Rose & Rose 11,121*, near El Parque, Aug. 15, 1906 (US); *Pringle 11,338*, near Cuernavaca, Gauteppec, limestone hills, alt. 4000 ft., Oct. 27, 1902 (G, US); *Pringle 11,915*, Cuernavaca, barranca bluffs, 4–6 ft., alt. 5000 ft., July 20, 1904 (F, G, US); *Pringle 13,771*, Cuernavaca, wet places, 4–6 ft., alt. 5000 ft., July, 1906 (G, US); *Pringle 6511*, wet barranca above Cuernavaca, 6–10 ft., alt. 6500 ft., Sept. 21, 1896 (US, type of *T. stipitatum* Rose; ANS, F, G, M, NY, UC, US, isotypes); *Pringle 6392*, near Cuernavaca, wet shaded places, five to eight feet high, stem leaves four to six, alt. 5000 ft., July 28, 1896 (US, type of *T. grandifolium* Rose and *T. grandiflorum* Rose; ANS, F, G, M, NY, UC, US, isotypes). PUEBLA: *Amable & Arsène 2022*, dist. Tepeaca, Acatzinco, alt. 2110 m., julio 1907 (US); *Arsène 1445*, près Puebla, barranca de l'Alseseca, Hacienda de Batan, près de Totimehuacan, alt. 2120 m., June 13, 1907 (G, US); *Arsène 2258*, dist. Tepeacan, La Barranquilla, alt. 2110 m., July, 1907 (M, US); *Pringle 9541*, Amozoc, bluffs of gulches, alt. 7000 ft., Sept. 10, 1901 (US, type of *T. obliquum*; F, G, M, isotypes). OAXACA: *Galeotti 4549* pro parte, Juquila del Sur (Paris Museum, TYPE of *T. gibbosum*; F, photograph of the type); *Pringle 5821*, cuesta de San Juan del Estado, Aug. 20, 1894 (G); *E. W. Nelson 1579*, valley of Oaxaca, alt. 6500–7800 ft., Oct. 3, 1894 (US). FIG. 65.

The types of none of the species listed above have been seen. However, I have at hand a photograph of one of them, furnished by the Field Museum, and numerous isotypes of the others. The material listed under the name *T. gibbosum* Lec., is fairly heterogeneous, but all attempts to segregate it along satisfactory lines have been unsuccessful.

66. *T. LONGISTYLUM* HBK. ex DC. Syst. 1: 171, 1817. *Planta* 12 dm., glabra nisi per foliolas inferne. *Pubescentia* sparsa e pilis crassiusculis, brevibus, opacis. *Caulis* teres flexuosus *nodis* inflatis, sulcatus, validissimus tamen nec facile compressione pertritus. *Sepala* 3–5 mm. *Filamenta* 4–5 mm. *Antherae* 2.5–4.0 mm., *acumine* ca. 0.4 mm. *Carpella* stipitata gibbosa dorso basi concavo, parte apicali convexo. *Stylus* una cum stigmatē 8–10 mm. *Carpella* matura ignota. Floret Aprili,

Majo, et verosimiliter Martio.—PERU: *Dombey* (Paris Museum, TYPE; F, ISOTYPE and a photograph of the type). LIMA: *Macbride & Featherstone 409*, Matucana, in shrubby thicket on western slope, 4 ft. high, bracts rose-green, anthers yellowish, alt. about 8000 ft., Apr. 12–May 2, 1922 (F, NY).

It is possible that the flowering material at hand might belong to some species already described from the fruiting stage, but the material is still too scanty to elucidate this point.

67. *T. RUTIDOCARPUM* DC. Syst. 1: 172, 1817. *Planta* 8–13 dm., glabra, foliolis inferne exceptis. *Pubescentia* sparsa e pilis crassiusculis brevibus opacis. *Caulis* sulcatus facillime pertritus. *Flores* polygamo-monoici, plurimi perfecti, pauci masculi. *Sepala* 4–5 mm. longa. *Filamenta* ca. 6 mm. *Antherae* ca. 3 mm., *acumine* 0.3–0.4 mm. *Stylus* una cum stigmate 3.5–6.5 mm. *Carpella* matura 5.5–6.0 mm. longa, *stipite* ca. 2 mm., ventre sub-rhomboideo ca. 4 mm. longo, ca. 2.8 mm. lato, *nervis* lateralibus paucis ramosis et anastomosantibus, nervo dorsali ad basem et superne concavo ad medias paululum convexo, ventrali gibboso et convexo. Floret Januario et Februario.—PERU: *Dombey* (Paris Museum, TYPE; F, photograph and fragment of type). APURIMAC: *Stork & Horton 10,693*, prov. Andahuaylas, Pincos, rainy-green shrubland, humus over sand, annual herb 1.3 m., monoecious, general color of fl. variable green to purple, fr. an immature follicle, alt. 2700 m., Feb. 19, 1939 (F). HUANCABELICA: *Stork & Horton 10,268*, prov. Tayacaja, Salcabamba, part shade, among shrubs, annual herb reaching 1 m., monoecious, stamens greenish yellow, conspicuous, follicles partly mature, alt. 3250 m., Jan. 7, 1939 (F). FIG. 67.

68. *T. VESICULOSUM* Lecoyer, Bull. Soc. Bot. Belg. 24: 130, 1885. *Planta* omnino glabra saepius haud glauca, metralis vel sesquimetralis. *Radices* fibrosae. *Flores* polygamo-monoici, plurimi perfecti pauci masculi. *Sepala* 5.0–6.5 mm. longa, ovata. *Antherae* 3.0–3.5 mm., *acumine* ca. 0.5 mm. *Filamenta* ca. 7 mm. *Stylus* una cum stigmate 7–10 mm. *Ovarii* stipes 0.5–1.5 mm. *Carpella* matura 7.0–7.5 mm. longa, *stipite* 1.0–2.5 mm., ventre 4.5–5.3 mm. longo, ca. 3.3 mm. lato, *nervis* lateralibus ramosis anastomosantibusque, nervo dorsali ad basem concavo ad medias et superne parum convexo, ventrali convexiore quam dorsali et gibboso. Floret a mense Martii usque ad Julii.—ECUADOR: *Spruce 5470*, in Andibus, 1857–1859 (NY, syntype); *Jameson* (US); *André 2100*, San Juan, Quindio, 8 martii, 1876 (F, NY); *Jameson 130*, Quitensian Andes at 11,000 feet of elevation, July, 1859 (NY). PICHINCHA: *Firmin 157*, Cerra del Cinto, Ugshu-Cinto, Camino, alt. 3250 m., Jul. 28, 1927 (US); *Jameson*, Pichincha, alt. 11,000 feet of elevation (NY); *Firmin 680*, borde del camino de La Magdalena al Cinto, pl. algo frequ-

ente en los matorrales, alt. 3100 m. [?], Oct. 25, 1928 (US). BOLIVAR: *Penland & Summers 589*, Hacienda Talahua, 1 m. tall, alt. 330 m., May 1, 1939 (F, US). AZUAY and CAÑAR: *Hitchcock 21,674*, between Cuenca and Huifgra, moist shady ravine, alt. 2700–3000 m., Sept. 11–13, 1903 (US); *Penland & Summers 1014*, Tipococha, up to 1½ meters, alt. 3200 m., July 11, 1939 (F, US). PERU, CUZCO: *Herrera 3070*, Apurimac Valley, “Pinco”, 1931 (US). FIG. 68.

Other syntypes not seen are *Mandon*, Sorata; *Jameson 212*; *Hieronymus*, Sierra Chica, Rio primero; *Goudot*, Bogota; *Jameson*, Artisana. These syntypes might be heterogeneous for they include a far greater range than the one we have accepted. There seems, however, to be some material of this species from Bolivia amongst *Rusby 501–502*, but we do not dare try to disentangle that mixture.

69. *T. Nelsonii*, sp. nov. *Planta* elata omnino pubescens. *Pubescentia* e pilis capitatis translucidis nisi in foliolis inferne ubi pili capitati cum pilis brevibus opacis truncatis intermixti sunt. *Flores* polygamo-monoici, plurimi perfecti, pauci masculi. *Sepala* ca. 5 mm. longa. *Filamenta* ca. 8 mm. *Antherae* ca. 3 mm., *acumine* ca. 0.5 mm. *Stylus* una cum stigmatate 6–7 mm. *Carpella* matura conspicue gibbosa, 7–8 mm. longa, *stipite* 1.5–2.0 mm., ventre ca. 6 mm. longo, ca. 3.5 mm. lato, *nervis* lateralibus gibbosis reticulatis, nervo dorsali ad basem concavo, ad medias et superne convexo, ventrali convexiore et gibboso. Floret a Junio usque ad Octobrem.—MEXICO, OAXACA: *Nelson 1788*, near Rayes, alt. 6700–10,000 ft., Oct. 20, 1894 (G, TYPE; US, ISOTYPE); *Conzatti & Gomez 2424*, dist. Cuycatlan, Cuyamecalco, alt. 1800 m., junio 23, 1909 (F, US). FIG. 69.

70. *T. PODOCARPUM* HBK. ex DC. *Syst.* 1: 171, 1817. *Physocarpum podocarpum* (DC.) Bercht. & Presl, *O Priroz. Rostl.* 1: 15, 1823. *T. cordifolium* Willd. ex Lec. *Bull. Soc. Bot. Belg.* 24: 262, 1885, nomen nudum ut synonymon. *Planta* circa sesquimetralis omnino glabra. *Flores* polygamo-monoici, plurimi perfecti, pauci masculi. *Sepala* ovata 4–7 mm. longa. *Filamenta* 3–7 mm. *Antherae* 3.0–4.5 mm., *acumine* 0.3–1.0 mm. *Ovarii stipes* 0.5–1.5 mm. *Carpella* matura caesia valde compressa apice acuta 9.0–10.5 mm. longa, *stipite* 2.5–3.0 mm., ventre 6.0–6.5 mm. longo, 2.8–3.3 mm. lato, *nervis* lateralibus reticulatis nullo modo gibbosis, nervo dorsali ad basem concavo ad medias superneque vel fere recto vel parum convexo, ventrali convexo saepius gibboso. Floret Junio, Septembri, Decembri et aliis.—VENEZUELA: *Cardona 299*, Táchira, Páramo de Tamá, alt. 3100–3300 m., July, 1939 (US); *Gehriger 180*, Mucurubá, quebrada vel pueblo, en las orillas y vegas de un riachuelo, cerca

de la casas, planta de 1.50 m., n. v. Colanillota, alt. 2500 m., junio 18, 1930 (ANS, F, M, NY, US); *Linden 362*, hautes Andes de Truxillo et de Merida, depuis 4000 jusqu'à 14,500 pieds de hauteur, 1842 (F). COLOMBIA: *Bonpland* (Paris Museum, TYPE; F, photograph and a few leaflets from the type); *Weddell 3808*, prov. Tomina, dépt. Chuquisaca, déc., 1845–janv., 1846 (F); *Triana*, Andes de Bogota, Quindio, vulgo "lutantillo" [?], alt. 2000–2700 m., 1851–1857 (NY); *Pennell 10,332*, dept. Caldas, Rio San Rafael below Cerro Tatama, clearing along stream, alt. 2400–2600 m., Sept. 7–11, 1922 (ANS, G, US); hb. *Parseval-Grandmaison*, Mt. Serrate près Bogota, 1861 (G); *Pennell 6898*, dept. of El Cauca, above Papayan, along stream, herb, flowers greenish-white, alt. 1750–1800 m., June 19, 1922 (ANS, G, US); *Killip & Smith 16,017*, dept. Santander, vicinity of Las Vegas, thicket, coarse herb, sepals green, anthers yellow, alt. 2600–3000 m., Dec. 21–23, 1926 (G, NY, US). ECUADOR: *Jameson 202*, Quito (US). FIG. 70, a and b.

Subsectio **Venturiana**, subsect. nov. *Flores* perfecti (!). *Antherae* apice truncatae. *Ovaria* 18–36 in flore. *Stigma* paululum clavatum. *Carpella* matura globosa *nervis* sinuosis gibbosisque.

T. inuncans nostrum might, perhaps, just as well belong to this group, but until the fruits of that species are known, it is not possible to settle this question. Its ovary is perfectly smooth, a fact suggesting that the fruit may not be gibbose at all, but this relation does not always hold true.

71. *T. Venturii*, sp. nov. *Planta* omnino glabra, 5–9 decimetrorum. *Radices* fibrosae paucae, parum tuberosae. *Folia* estipellulata, 3–4-ternata *petiolulis* arcuantibus, *stipellis* reductis. *Foliolae* tenues. *Inflorescentia* foliosa, pauciflora, paniculata nec apice racemosa. *Flores* lutei perfecti (!), 6–12 in planta. *Sepala* ovalia, nec satis nota. *Stamina* 12–20 in flore. *Filamenta* capillacea subrigida, 5.5–7.0 mm. *Antherae* luteae, oblongo-lineares, apice squarrosae vel retusae, 2.0–2.5 mm. *Pistilla* numerosa 18–36 in flore, stipitata, inflata, *stigmatibus* 2.5–6.0 mm., parum clavato, apice obtuso, aliquandiu persistente. *Carpella* matura numerosa ventre globoso 2.0–2.5 mm., *nervis* gibbosis et sinuosis, nervo dorsali fere tam convexo quam ventrali. Floret Decembri.—ARGENTINA, SALTA: *Venturi 10,026*, dept. Guachipas, Alemania, bajo bosque alto, flor amarilla, Dic. 15, 1929 (G, TYPE; M, NY, US, ISOTYPES). TUCUMÁN: *Venturi 7713*, dept. Burroyaco, Cerro del Campo, en el alisal, flor amarilla, Dec. 15, 1928 (F, G, US); *Venturi 3995*, (parte), dept. Chicligasta, Estancia Las Pavas, en los prados, flor amarilla, Dec. 11, 1925 (G). CATAMARCA: *Jørgensen 1304* (pars), dept. Andalgalá, El Candada (US). FIG. 71, a–c.

Sectio **Pelteria** sect. nov. *Planta* glabra, vel pubescens, nonnunquam glauca vel lucida vel scabra, *radicibus* fibrosis. *Folia* 1-6-ternata *foliolis* peltatis. *Flores* omnes perfecti vel polygamo-monoici, cum alii perfecti alii masculi sunt. *Pedunculi* sub fructu reflexi. *Filamenta* filiformia purpurascens. *Sepala* ovata virescentia vel plus minusve purpurascens. *Stigmata* filiformia, 1-10 in flore, decidua. *Carpella* matura compressa inaequilateralia, subsessilia vel stipitata. Species typica *Thalictrum peltatum* DC. sit.

This section is restricted to the mountaineous regions of Mexico and Central America. Other species with peltate leaflets also occur in Eastern Asia, but they belong to another subgenus.

In most sections of the genus, the vegetative characters are highly variable and furnish but few characters to distinguish species. Contrariwise, in this section a most satisfactory key can be drawn up entirely on vegetative characters. As for the flowers, they offer but few instances of good characters permitting separation of the species from one another. The fruits offer much better characters but they are deceptive in that the immature fruit may be larger, longer, more compressed, more recurved and less stipitate than the mature one.

Full many a species of this section has been described as polygamous or dioecious. With the help of a good binocular, thorough examination was undertaken of all the flowering material and it failed to reveal any pistillate or staminate plant. In many species all flowers are perfect, in others each plant bears both perfect and staminate flowers. Staminate flowers tend to bloom later than the perfect ones.

Subsectio **Subpeltata**, subsect. nov. *Planta* glabra vel pubescens vel scabra. *Folia* 3-6-ternata, petiolata. *Foliolae* prope marginem insertae 3-7-lobatae, vel grosse 3-7-dentatae. *Flores* omnes hermaphroditi, vel plurimi perfecti et pauci masculi in planta.

- a. Pili omnes brevissimi capitati. . . . b.
 b. Caulis glaber.72. *T. Lankesteri*.
 b. Caulis pubescens.73. *T. Torresii*.
 a. Pauci pilorum aciculares semimillimetrales vel longiores
 74. *T. guatemalense*.

72. *T. LANKESTERI* Standley, Field Mus. Nat. Hist. Pub. Bot. 18: 435, 1937. *Planta* glabra nisi per foliolas, verosimiliter metralis. *Pubescentia* e pilis capitatis vel crassiusculis brevissimis. *Radix* fibrosa. *Antherae* ca. 2.5 mm., *acumine* 0.5-1.0

mm. *Filamentum* ca. 3.5 mm. *Stylus* una cum stigmate 8–10 mm. *Carpella* matura compressa, glabra vel pubescentia, ca. 6 mm. longa, ventre 4.5–5.0 mm. longo, 2.2–2.5 mm. lato, *stipite* 0.5–1.0 mm., *nervis* lateralibus valde anastomosantibus nervo dorsali fere recto. Floret Junio.—COSTA RICA: *Brenes 14,506*, près San Ramon, pentes rocheuses du cerro de San Isidro, alt. 1300 m., 14 junio, 1901 (G, US); *Solis 297*, Icsasu, cerro de Moltí, alt. 1300 m., Aug., 1935 (F, M); *Tonduz 8951*, La Verbena, Aug., 1894 (US); *C. H. Lankester 337*, Concaves, rocky slopes, July, 1919 (F, TYPE and ISOTYPE). FIG. 72, a–d.

73. *T. Torresii* Standley & Boivin, sp. nov. *Planta* metralis omnino pubescens, nisi in carpellis cum *pubescentia* est e pilis capitatis. *Folia* caulinarum sessilia in apice dilatationis petiolaris. *Sepala* elliptica 2.5–3.0 mm. longa. *Antherae* ca. 3.5 mm., *acumine* millimetræli. *Filamenta* ca. 5.5 mm. *Stylus* una cum stigmate 5.0–7.5 mm. *Carpella* matura compressa sessilia ca. 7.5 mm. longa, ca. 2.0 mm. lata, *nervis* fere simplicibus, nervo dorsali concavo.—COSTA RICA: *Torres 187*, Santa Lucia, Paraiso, terreno pedregoso, altura planta 1 m., tiene en las hojas una sustancia pegajosa, 28 julio, 1927 (US, TYPE); *Valerio 1652*, Tiquires, alt. 1700 m., July 1, 1937 (F). FIG. 73, a–d.

74. *T. GUATEMALENSE* C. DC. & Rose, Contrib. U. S. Nat. Herb. 5: 88, 1899. *T. peltatum*, var. β *hirsutum* Loes., Bull. Herb. Boiss. 2° série, 3: 89, 1903. *T. hondurensis* Standley ex Yuncker, Field Mus. Nat. Hist., Bot. 17: 362, 1938. *Planta* omnino pubescens, plus minusve scabra, 8–12–(20) dm. *Pubescentia* e pilis aliis capitatis crassiusculis truncatis aliis elongatis flexuosis. *Radix* fibrosa. *Folia* caulinarum saepius 4-ternata *petiolo* brevi, vel sessilia in apice dilatationis petiolaris. *Pedicelli* plus minusve recurvati. *Sepala* elliptica 3.0–3.5 mm. longa. *Antherae* 4–5 mm., *acumine* 0.5–1.0 mm. *Filamenta* 3.5–4.0 mm. *Stylus* una cum stigmate 6–9 mm. *Fructus* compressus 3.5–5.5 mm. longus, ventre 3.0–4.5 mm. longo, 1.5–2.0 mm. lato, *stipite* 0–0.5 mm., *nervis* parum ramosis reticulatisque, nervo dorsali fere recto vel concavo. Floret Junio vel Julio vel Augusto.—MEXICO, MEXICO: *Hinton et al. 4263*, Temascaltepec, Tejupilco, llano, stalks 1 m., July 31, 1935 (M); *Hinton 4530*, Temascaltepec, Nanchititla, in the water, 2 m. high, Aug. 15, 1933 (G, NY, US); *Matuda 1739*, Cascada Siltepechis, Ago. 5, 1937 (F, G, M, NY). MICHOACAN: *Arsène 5282*, vicinity of Morelia, Loma Santa Maria, alt. 1950 m., Sept. 4, 1910 (G, M, NY, US); *Arsène 2610*, près Morelia, Cuincho, alt. 1900 m., July 1, 1909 (G, M, NY, US); *Leavenworth & Hoogstraal 1232*, Tancitaro region, two miles south of Uruapan, rocky land, very hirsute almost prickly, very common, alt. 5577 ft., July 29, 1941 (F, M, NY). CHIAPAS: *Matuda 4389*, near Siltepec, Honduras, in encinal, alt. 1500 m., July 9, 1941 (M); *Purpus 6798*, Cerro del

Boqueron, Sept., 1913 (UC); *E. W. Nelson 3236e*, near San Cristobal, alt. 7000–8000 ft., Sept. 18, 1895 (US). GUATEMALA: *S. Hayes*, Las Vacas barranca, June 1860 (G, US). HUEHUETE-NANGO: *C. & E. Seler 3153*, unter Gebüsch auf dem Coes von Zac-ulen bei Huehuetenango, 17 juni, 1896 (G, NY, US, isotypes of *T. peltatum* var. β *hirsutum*); *C. & E. Seler 2857*, Checulá, auf den mit Busch u. Wald bewachsenen Steinfalzen alter Bauten, 28 aug., 1896 (G, NY, US); *Standley 81,212*, mountains west of Aguacatán on the road to Huehuetenango, oak forest, herb 1 m. tall, alt. about 1950 m., Dec. 27, 1940 (F); *Standley 81,566*, near Puente de Xinaxó, along road 13 km. west of Huehuetenango, pine-oak forest, herb 1 m. tall or less, common but out of flower, alt. about 1800 m., Dec. 30, 1940 (F); *Standley 81,973*, along Aguacatán road east of Huehuetenango at km. 13–14, damp forested quebrada, common, alt. about 1950 m., Jan. 2, 1941 (F); *Standley 83,010*, east of San Rafael Pitzal, near crossing of Rio San Juan Ixtán, open oak forest, herb 1 m. tall, common, alt. about 1730 m., Jan. 9, 1941 (F). BAJA VERAPAZ: *Cook & Doyle 254*, Santa Rosa, May 28, 1904 (US); *von Türckheim 1313*, Santa Rosa, im Walde, alt. 5000 p., Juli, 1887 (F, G, US); *von Türckheim 2307*, zwischen Santa Rosa und Patal, Wald, alt. 1600 m., Juli, 1908 (F, G, NY, US). ZAPACA: *Steyermark 29,676*, Sierra de las Minas, between Río Hondo and Finca Alejandria, moist forested slopes, alt. 1700–2000 m., Oct. 11, 1939 (F); *Steyermark 29,654*, along trail between Río Hondo and summit of mountain at Finca Alejandria, pine-covered slopes, rocky places, alt. 1000–1500 m., Oct. 11, 1939 (F). CHIMALTENANGO: *Standley 57,897*, along road from Chimaltenango to San Martín, wet thicket, common but past fruit, herb 3–4 ft., alt. 1500–1900 m., Nov. 25, 1938 (F); *Standley 57,927*, eodem, damp forest, herb 3 ft., alt. 1500–1900 m., Nov. 25, 1938 (F); *Standley 61,561*, southeast of Patzún, barranco de La Sierra, pine and oak forest, herb 3–4 ft., common, alt. about 2100 m., Dec. 31, 1938 (F); *Standley 80,039*, southeast of Chimaltenango, along Río Guacalate, oak forest, common but past flowers, alt. about 1700 m., Dec. 14–23, 1940 (F). SACATEPEQUEZ: *Gomez 794*, Santiago, alt. 6500 p., 1891 (G, US, paratypes of *T. guatemalense*); *Standley 58,980*, cuesta de la Canas, above Antigua, damp thicket, herb 4 ft., alt. about 1950 m., Dec. 6, 1938 (F); *Standley 80,994*, along Río Guacalate, on road between Antegua and Chimaltenango, alt. about 1660 m., Dec. 23, 1940 (F). GUATEMALA: *Deam 6096*, on top of mountain, growing among rocks, June 1, 1909 (G, US); *Tonduz 657*, près de Guatémala, dans les broussailles des collines, juin 1921 (G, NY, US); *Aguilar 249*, 1939 (F). SANTA ROSA: *Heyde & Lux 3933*, Cenaguilla, alt. 4000 p., Sept., 1892 (G, M, NY, US). JALAPA: *Steyermark 32,541*, Cerro Alcoba, just east of Jalapa, oak woods, alt. 1300–1700 m., Dec. 2, 1939 (F);

Standley 76,810, 76,823, on hills northeast of Jalapa, rocky scrub-oak forest, herb 1 m. tall, alt. 1400–1600 m., Nov. 10, 1940 (F). HONDURAS, COMAYAGUA: *Yuncker, Dawson & House 5796*, near Siguatepeque, on rocky hillside, plants about 4 ft. tall, more or less viscid and with pungent odor, roots a rich yellow color, June to Aug., 1936 (F, type; G, M, NY, US, isotypes of *T. hondurensis*). FIG. 74, a–d.

The type of *T. guatemalense* C. DC. & Rose (*Heyde 164*) was stored away and could not be seen.

Subsectio **Eupeltata** subsect. nov. *Planta* glabra vel pubescens e pilis multiseriatis translucidis, vel crassiusculis opacis truncatis, nonnunquam glauca vel valde lucida. *Foliolae* ampliores rotundae vel obovatae, *petiolis* circa tertias insertis. *Flores* polygamo-monoici, plurimi perfecti, pauci masculi, nisi *Thalictro Treleasii* nostro cujus omnes perfecti sunt. Species typica *Thalictrum peltatum* DC. sit.

Whether the leaves are dull, shining or glaucous can not be relied upon as a specific character in this section, if we judge by what occurs in *T. Pringlei* Wats. None of the other species has been collected at all stages throughout the year, but they are likely to follow a course of development parallel, if not similar, to that of *T. Pringlei*.

- a. *Planta* glabra, etsi pubescens nullo modo scabra . . . b.
- b. *Folia* omnia petiolata, petiolo baso dilatato . . . c.
- c. *Planta* glabra . . . d.
- d. *Foliolae* membranaceae, per marginem fere totam crenatae, crenis ca. 20 in foliola . . . 75. *T. Treleasii*.
- d. *Foliolae* coriaceae, ad apicem grosse dentatae vel crenatae, crenis dentibusve 0–10 in foliola . . . e.
- e. *Planta* fere metralis, antheris acumen subequantibus, stylo una cum stigmate 8–13 mm. . . . 76. *T. peltatum*.
- e. *Planta* 0.35–0.80 metri, antheris quater ad sexies longior quam acumine, stylo una cum stigmate 6–9 mm. . . . 77. *T. Pringlei*.
- c. *Planta*, nisi in foliorum facie superna, pubescens, foliolis per ambas paginas valde rugosis. . . . 78. *T. Pringlei*, var. *reticulatum*.
- b. *Folia* omnia, nisi inflorescentiae reducta, sessilia in apice dilatationis stipularis . . . f.
- f. *Foliolae* 9 in foliis singulis caulinaribus et in inflorescentiae nonnullis . . . 79. *T. Roseanum*.
- f. *Foliolae* 11–12 in foliis singulis nisi in inflorescentiae reductis . . . g.
- g. *Antherae* 3.0–4.5 mm., carpella matura 8.5–10.0 mm. longa . . . 80. *T. Arsenii*.
- g. *Antherae* 2.0–2.5 mm., carpella matura 5.5–7.5 mm. longa . . . 81. *T. jaliscanum*.
- a. *Planta* scabra pubescens, nullo modo glauca . . . h.
- h. *Foliolae* per faciem supernam scabrae . . . 82. *T. cuernavacanum*.
- h. *Foliolae* glabrae superne . . . 83. *T. cuernavacanum*, var. *supraglabrescens*.

75. *T. Treleasii*, sp. nov. *Planta* glabra circiter 6 dm. alta. *Folia* petiolata. *Foliolae* membranaceae per marginem fere totam crenatae, crenis 20 admodum. *Sepala* ca. 4 mm. *Stamina* 20–30 in floribus singulis. *Filamenta* 5–6 mm. *Antherae* 4.0–5.5 mm. *Acumen* antherae 0.5–0.7 mm. *Ovaria* 3–6 in flore. *Stylus* una cum stigmate 6–9 mm. *Fructum* auctor non cognoscit, consimilem *Thalictro Pringlei* tamen esse videtur. Floret Junio.—MEXICO, GUERRERO: *Langlassé 1061*, Sierra Madre, alt. 1000 m., juin 16, 1899 (G, TYPE; US, ISOTYPE). FIG. 75, a and b.

Dedicated to Prof. WILLIAM TRELEASE who in 1886 published a monographic paper on the genus as represented in America north of Mexico.

76. *T. PELTATUM* DC. Prod. 1: 11, 1824, nec sensu J. N. Rose, Contrib. U. S. Nat. Herb. 5: 186, 1899; nec *T. peltatum* Sessé & Moc., Fl. Mex. 134, 1894. *Planta* fere metralis, parum si vero glauca. *Foliolae* plus minusve coriaceae basi rotundae, ad apicem grosse dentatae vel crenatae, crenis vel dentibus 3–10 in foliola. *Sepala* 3.3–4.5 mm. longa. *Filamenta* 5–7 mm. *Antherae* 1.9–4.0 mm., acumina 2.0–6.5 mm. subaequantes. *Ovaria* 0–5 in flore, *stylo* una cum stigmate 8–13 mm. *Carpella* matura ignota, verosimiliter (ex immaturis) ca. 5.0 mm. longa, 2.0 mm. lata, semi-obovata, parum si vero stipitata, ista *Thalictri Pringlei* Wats. approximantia. Floret Augusto.—MEXICO, MEXICO: *Hinton 4547*, distr. of Temascaltepec, Nanchititla, oak woods, Aug. 18, 1933 (M, US); *Alaman*, [probably near Mexico city¹], 1811 [or 1821?¹] (TYPE in Delessert Herbarium; F, photograph of same). MICHOACAN: *Hinton 15,071*, distr. Barroloso, Coalcoman, woods, alt. 1300 m., Aug. 7, 1939 (G). FIG. 76, a–c.

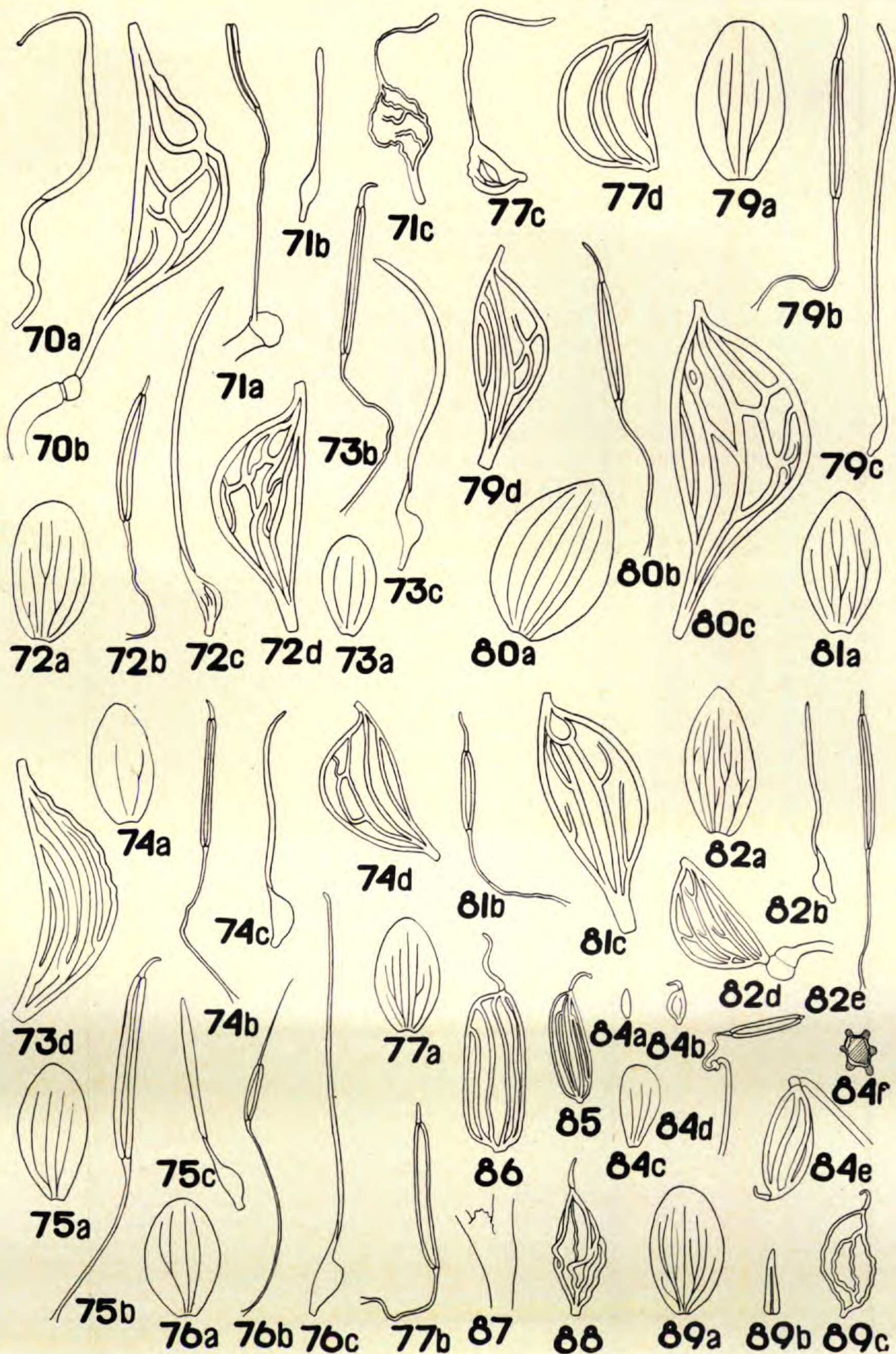
DeCandolle's original description applies well to all species of subsect. *Eupeltata*. In 1899, J. N. Rose (Contrib. U. S. Nat. Herb. 5: 186) with the help of C. De Candolle solved the problem by comparing specimens from five different species with the actual type. Since *T. peltatum* DC. had been collected but once until as late as 1933, it is not surprising that the name was applied to its closest related species, for which we are now proposing the name *T. Roseanum*. But as we now have a very good photograph at hand it becomes possible even to take measurements of the actual type, e. g.: sepal 3.3 mm., acumen 2.3 mm., anther 1.9 mm., filament 5.1 mm., stigma 10.5–13.0 mm., fruit 5.0 x 2.1 mm., etc.

¹ Notes of the author.

77. *T. PRINGLEI* Wats. Proc. Am. Acad. **25**: 141, 1890. *Planta* glabra, saepius sub florendi tempus caeca, deinde saepius glauca cum fructus maturant, sub maturandi saepius lucida, posteaque lamina lucida exfoliatur, et planta pallida caeca revelatur. *Radix* fibrosa. *Folia* petiolata 2-4-ternata. *Foliolae* margine vel integra vel sinuata vel crenata vel grosse dentata, dentibus vel crenis 0-7 in foliola. *Sepala* 3.0-4.5 mm. longa. *Stamina* 30-50 in flore. *Filamenta* 3.0-3.5 mm. *Antherae* 3-4 mm., *acumine* 0.5-0.8 mm. *Stylus* una cum stigmate 6-9 mm. *Carpella* matura subsessilia semi-ovata, *nervis* simplicibus vel ramosis et anastomosantibus, nervo dorsali fere recto vel parum concavo. Floret Junio Julioque.—MEXICO, NAYARIT: *M. E. Jones* 22,843, Tepic, Feb. 15, 1927 (F). MEXICO: *M. E. Jones* 85, La Palma. June 9, 1892 (UC, US); *Sarton*, Toluca Mts., 1852 (US). MICHOACAN: *Leavenworth & Hoogstraal* 1823, Tancitaro region, Apatzingan, common in open pine forest above Acahuato, sometimes in pure stands, alt. 3500-4000 ft., Aug. 23, 1941 (F); *Leavenworth* 395, Tancitaro on the road from Tancitaro to Apatzingan, here 2'-4', common on rocky banks in pine woods from 4000-6000 ft., alt. 5000 ft., July 30, 1940 (F, M, NY); *Leavenworth & Hoogstraal* 989, Tancitaro, west of Santa Clara, gravelly bank near stream, open pine forest, alt. 6000 ft., July 11, 1941 (F, M). JALISCO: *Pringle* 2478, slopes of the barranca near Guadalajara, June 29, 1889 (G, TYPE; ANS, F, M, NY, UC, US, ISOTYPES); *Pringle* 2479, hillsides near Guadalajara, slopes of the barranca of Guadalajara, alt. 5000 ft., July 16, 1902 (F, G, M, NY, US); *Rose & Hough* 4824, Guadalajara, in Barranca, July 9, 1899 (US); *Reke* 4581, Guadalajara, Barranca Ibarra, alt. 1400 m., Nov., 1922 (US); *Mexia* 1412a, Sierra Madre Mtns., San Sebastian, trail to Mascota, damp ravine in open pine forest, prominent on forest floor, alt. 1425 m., Jan. 7, 1927 (F, G, M, NY, UC). FIG. 77, a-d.

78. *T. PRINGLEI* Wats., var. *RETICULATUM* Rose, Contrib. U. S. Nat. Herb. **5**: 188, 1899. *Planta* 35-40 cm., pubescens nisi in pagina superna *foliolarum*. *Foliolae* vel crenatae, vel repandae, vel integrae, per ambas paginas rugosae *nervis* conspicue reticulatis.—MEXICO, NAYARIT: *Rose* 1985, Territorio de Tepic, between Pedro Paulo and San Blascito, Aug. 6, 1897 (US, TYPE; G, ISOTYPE); *Rose* 1985a, Territorio de Tepic, foothills between Pedro Paulo & San Blascito, Aug. 4, 1897 (US); *Rose* 3372, Territorio de Tepic, between Dolores & Santa Gertrudis, Aug. 7, 1897 (US).

The type of this variety was stored away and hence it has not been seen. With better flowering material and fully mature fruits, this variety might prove specifically different from the typical form.



DETAILS OF FLOWERS OR FRUITS OF *THALICTRUM*, all $\times 4$.

(For explanation see end of paper.)

79. *T. Roseanum*, sp. nov. *T. peltatum* Sessé & Moc. Fl. Mex., 2: 134, 1894 nec *T. peltatum* DC. Prod. 1: 11, 1824. *Planta* glabra, saepius conspicue glauca, metralis vel altior. *Folia* biternata, sessilia in apice dilatationis stipularis. *Foliolae* majores orbiculares, ad apicem crenatae vel grosse dentatae. *Sepala* 5.0–5.5 mm. longa. *Antherae* 2.2–3.2 mm., *acumine* 1.0–1.5 mm. *Filamenta* 4–5 mm. *Stylus* una cum stigmate 6.5–9.0 mm. *Carpella* matura compressa 5.6–6.5 mm. longa, *stipite* 0.5–1.5 mm., *ventro* 4.2–4.5 mm. longo, 2.2–2.6 mm. lato, *nervis* nonnunquam parum ramosis anastomosantibusque, nervo dorsali convexo, ventrali convexiore quam dorsali. Floret Julio mense. An etiam Junioque?—MEXICO, MORELOS: *Pringle* 7448, bluffs of barranca above Cuernavaca, alt. 6500 ft., Aug. 23, 1897 (G, TYPE; M, US, ISOTYPES); *Pringle* 8261, bluffs of mountain canyon above Cuernavaca, alt. 6500 ft., Sept. 30, 1899 (ANS, F, G, M, NY, UC, US); *Pringle* 7205, bluffs of barranca near Cuernavaca, alt. 6000 ft., Jul. 28, 1896 (G, US). FIG. 79, a–d.

Dedicated to the late JOSEPH NELSON ROSE who laid the foundations for our understanding of the Mexican species of *Thalictrum*.

T. peltatum Sessé & Moc. is a heterogeneous species as can be easily seen by what is preserved of it at the Field Museum. However the description seems mainly based on *T. Roseanum*. The fragments can not be identified with certainty.

80. *T. Arsenii*, sp. nov. *Planta* glabra saepius valde glaucescens. *Folia* 2–4-ternata, sessilia in apice dilatationis stipularis. *Foliolae* ovatae majusculae nonnunquam ad decimetrum diametro attingentes, saepius tamen circiter semidecimetrales, ad apicem grosse dentatae vel crenatae. *Sepala* 4.5–5.0 mm. longa. *Stamina* 25–30 in flore. *Antherae* 3.0–4.5 mm., *acumine* 1.2–2.0 mm. *Filamenta* 5–6 mm. *Stylus* una cum stigmate ca. 7.5 mm. *Carpella* matura compressa, ad *stipitis* apicem parum recurvata, 8.5–10.0 mm. longa, *ventro* 5.0–6.5 mm. longo, ca. 3.5 mm. lato, *nervis* aliquando simplicibus, saepius tamen ramosis anastomosantibusque, nervo dorsali convexo, ventrali convexiore quam dorsali. Floret sub menses Julii et Augusti.—MEXICO, MICHOACAN: *Arsène*, vicinity of Morelia, Jaripeio, alt. 2100 m., Jul. 13, 1911 (M, US); *Arsène*, près Morelia, Coronilla, 19 sept., 1909 (NY); *Arsène* 2490, vicinity of Morelia, Coronilla, en face de la prise d'eau, alt. 2000 m., 19 sept., 1909 (US); *Arsène* 5470, vicinity of Morelia, Rincòn, alt. 2000 m., 14 août, 1910 (G, TYPE; M, NY, US, ISOTYPES); *Kenoyer* A-482, Morelia, Aug. 17, 1938 (M); idem, Aug. 18 (F); *Arsène* 8, Morelia, talus, 8 juin, 1910 (CA); *Arsène* 13, Morelia, Rincòn, alt. 2000 m., 14 août, 1909 (F). FIG. 80, a–c.

Dedicated to Brother G. ARSÈNE, an enthusiastic field-botanist. His Mexican collections are both abundant and well preserved and form a high percentage of the herbarium material at hand for study.

81. *T. JALISCANUM* Rose, Contrib. U. S. Nat. Herb. 5: 187, 1899. *Planta* glabra saepius valde glaucescentia, sesquimétralis usque bimétralis. *Folia* 2-6-ternata. *Fiololae* orbiculares vel obovales, ad apicem crenatae vel grosse dentatae. *Sepala* 3.0-3.5 mm. longa. *Stamina* ca. 30 in flore. *Antherae* 2.2-2.5 mm., *acumine* 1.2-1.7 mm. *Carpella* matura compressa, 5.5-7.5 mm. longa, ventre 5.0-5.5 mm. longo, 2.0-2.5 mm. lato, *stipite* 0-1.5 mm. longo, *nervis* ramosis anastomosantibusque, nervo dorsali convexo, ventrali convexiore quam dorsali.—MEXICO, MEXICO: *Hinton* 4259, Temascaltepec, Telpintla, alt. 1840 m., July 28, 1933 (G, NY); *Hinton et al.* 6557, Temascaltepec, Rincon del Carmen, edge of oak woods, 1.5 m. high, Sept. 6, 1934 (G, NY, US); *Hinton* 1078, Temascaltepec, Volcan, rolling prairie, 2 m. high, alt. 1410 m., July 18, 1932 (F); *Hinton* 6740, Temascaltepec, Platanal, hill, 1.5 m. high, Oct. 11, 1934 (NY). JALISCO: *Rose & Hough* 4785, near Tequila, July 5 and 6, 1899 (US); *Goldsmith* 28, east of Volcano Colima, wooded hills, alt. 5000 ft., July 13, 1905 (G); *Rose & Painter* 7519, near Etzatlan, Oct. 2, 1903 (NY, US); *Rose & Painter* 7643, near Chapala, Oct. 5, 1903 (US); *Diquet* (NY): *Mr. & Mrs. J. G. Lemmon* 157, lake Chapala, 1905 (F, G, UC). FIG. 81, a-c.

The type (*Rose* 2840) has not been seen but the original description is clear enough. One label states that the plant is 3.4 m. high. Such a height is not impossible, but the way the number presents itself suggests the possibility of an error.

82. *T. CUERNAVACANUM* Rose, Contrib. U. S. Nat. Herb. 5: 187, 1899. *Planta* omnino scabra, 7-12 decimetrorum, nullo modo glauca. *Folia* 2-3-ternata, petiolata, dilatatione petiolarum reducta. *Foliolae* orbiculares, per marginem fere totam crenatae. *Stamina* ca. 30 in flore. *Antherae* 2.5-5.0 mm., *acumine* 0.7-1.2 mm. *Filamenta* 4.0-5.5 mm. *Stylus* una cum stigmate 4-9 mm. *Carpella* matura compressa 3-5 mm. longa, 1.5-2.8 mm. lata, *stipite* 0-0.5 mm., *nervis* simplicibus vel parum ramosis anastomosantibusque, nervo dorsali recto vel paululum convexo. Floret Junio et Julio.—MEXICO, MORELOS: *Rose* 6860, near Cuernavaca, Sept. 8, 1903 (NY, US); *Pringle* 7238, near Cuernavaca, rocky bluffs of barranca, alt. 5000 ft., July 26, 1896 (US, TYPE; F, G, M, ISOTYPES); *Pringle* 6878, above Cuernavaca, lava fields, alt. 7000 ft., June 27, 1898 (ANS, F, G, M, NY, UC, US, paratypes). FIG. 82, a-d.

Type not seen, but there is an abundance of isotypes and paratypes at hand.

83. *T. CUERNAVACANUM* Rose, var. **supraglabrescens**, var. nov., Morton in litt. *Foliolis supra glabris nec scabris*.—MEXICO, GUERRERO: *Rusby 153*, Limon Mtn., alt. 4000 ft., July 28, 1910 (US, TYPE and ISOTYPE; NY, ISOTYPES); *Lyonnet 304*, Taxco, julio, 1929 (US); *Kenoyer A-481*, Taxco, July 20, 1938 (F).

Sectio **Heterogamia**, sect. nov. Sect. *Thalictrum*, 1. *Heterogama* DC., Syst., 1: 172, 1817. *Plantae glabrae vel pubescentes. Pubescentia, cum adest, pilorum capitatorum translucidorum. Flores dioici. Sepala dimorpha, floris masculi majora saepius colorata, foeminei minora viridia vel raro purpurascencia. Filamenta imprimis lutea deinde nonnunquam purpurascencia, nec clavata sed filiformia et sub antheris paullulum dilatata. Stigma plus minusve bialatum. Species typica Thalictrum dioicum L. sit.*

Group confined to Mexico, United States, Canada and the French Islands of St.-Pierre et Miquelon.

Subsectio **Debilia**, subsect. nov. *Plantae glabrae, foliis ternatisectis, radicibus tuberosis fusiformibus haud stoloniferae. Caulis basis decumbens. Folia inferiora desunt nisi reducta velis vaginis, intermedia plurima conferta, superiora pauca sparsa, inflorescentiae minora. Stipellulae desunt. Inflorescentia elongata pauciflora paniculata. Carpella matura subsessilia recta haud compressa, ventre symetrico pariete membranaceo, nervis simplicibus convexis nec sinuosis. Species typica Thalictrum debile Buckley sit.*

- a. Carpella matura ovoidea; stigma 0.5–1.0 mm. Planta rigida radicibus nigris 84. *T. texanum*.
 a. Stigma 1.3–3.0 mm. Plantae decumbentes radicibus brunneis b.
 b. Carpella matura elliptico-lanceolata, 0.7–1.2 mm. lata 85. *T. debile*.
 b. Carpella matura ellipsoidea, 1.5–2.0 mm. lata 86. *T. arkansanum*.

84. *T. TEXANUM* (Gray) Small, Fl. Se. U. S. 446, 1903. *T. debile* Buckley, var. *texanum* Gray ex E. Hall, Pl. Tex. 3, 1873, nomen nudum; Gray, Syn. Fl. N. Am. 1: 18, 1895. *Planta rigida 10–45 cm. Radices nigricantes, cum siccatae, haud costatae sed irregulares. Sepala floris maris 1.7–3.0 mm., foeminei 0.7–1.5 mm. longa. Filamenta ca. 1.5 mm. Antherae 1.4–2.0 mm. Stigma 0.5–1.0 mm. Carpella matura ovoidea, stipite 0.1–0.3 mm., ventre 2.7–3.7 mm. longo, 1.4–1.6 mm. lato, apice acuto, basi rotundo, nervis 6–8 in fructu. Verosimiliter floret Februario et Martio*.—TEXAS: *Wright 170*, Fayette Co., Cumming's Creek, May 10, 1849 (ANS, G); *Hall*, Houston, April, 1872 (F, paratype); *Hall 3*, Houston, moist prairies,

March 28, 1872 (G, TYPE; ANS, F, M, NY, US, ISOTYPES). FIG. 84, a-f.

85. *T. DEBILE* Buckley, Amer. Journ. Sci. **45**: 175, 1843. *Planta* innitens, 10–40 cm. *Radices* brunneae, cum siccatae, costatae. *Sepala* floris maris obovata, ca. 1.7–2.0 mm., foeminei saepius lanceolata, ca. 1.0 mm. *Filamenta* ca. 2.0 mm. *Antherae* 1.7–2.0 mm., *acumine* 0.1–0.3 mm. *Stigmata* 1.3–2.0 mm. *Carpella* matura oblongo-lanceolata, *stipite* ca. 0.1 mm., ventre per ambas apices rotundo 3.0–3.7 mm. longo, 0.7–1.2 mm. lato, *nervis* 8–10 in fructu. Floret Aprili.—GEORGIA: Chapman, Rome, 1882 (F, G, US); Chapman, Mts. of Georgia (M, US). ALABAMA: Nieuwland, Blount Co., Warnock Peak, April 12, 1930 (N-ND); Buckley, Wilcox Co., woods, rich alluvial soil, procumbent, April, 1840 (NY, US, paratypes); Buckley (ANS, G, paratypes); Buckley, April (M, paratype); Buckley, Wilcox Co., near Allenton, rich woods, April, 1842 (M, TYPE); Buckley, April, 1841 (M, NY, paratypes). FIG. 85.

86. *T. arkansanum*, sp. nov. *Planta* erecta 20–40 cm. *Radices* brunneae nonnunquam, cum siccatae, costatae. *Sepala* floris maris ovata vel elliptica 2.0–3.0 mm. longa, foeminei ovata 1.0–1.5 mm. longa. *Filamenta* 2.0–3.0 mm. *Antherae* 1.8–2.3 mm., *acumine* 0.1–0.4 mm. *Stigma* (1.5)–2.3–3.0 mm. *Carpella* matura sessilia ventre ellipsoideo 3.5–4.5 mm. longo, 1.5–2.0 mm. lato, *nervis* 10–12 in fructu. Floret Aprili et Majo.—ARKANSAS: Canby, Sargent, Trelease & Bush, Fulton, rich woods, Apr. 18, 1901 (ANS); Bush 2445, Fulton, low ground, Apr. 26, 1905 (M, TYPE); E. J. Palmer 9403, Hempstead Co., Fulton, upland open woods, Apr. 8, 1916 (ANS, US); E. J. Palmer 7151, Fulton, upland woods, Apr. 5, 1915 (NY, US); J. C. Kellogg, Arkansas Post, March 14, 1909 (M); Bush 511, Fulton, common in low ground, Apr. 4, 1900 (G, M, US); Nuttall (ANS); Bush 2271, Texarkana, low rich woods, Apr. 8, 1905 (M). FIG. 86.

Subsectio **Sinuosa**, subsect. nov. *Plantae* glabrae, raro paululum pubescentes pilis capitatis. *Radices* tuberosae. *Folia* sparsa foliolis parvis. *Stigma* sagittatum. *Carpella* matura recta basi rotunda, apice acuta, *nervis* simplicibus sinuosissimis et crassiusculis, nec costata. Species typica *Thalictrum pinnatum* Wats. sit.

- a. Folia ternata vel raro subpinnata. . . . b.
 b. Caulis basis procumbens aphyllus, folia ternata. . . . 87. *T. pudicum*.
 b. Caulis rigidus erectus, folia 2–3-ternata vel subpinnata, licet folia ramorum ternata. . . . c.
 c. Caulis a basi ramosus, ramis foliosioribus, foliis 2-ternatis 88. *T. madrense*.
 c. Caulis foliis caulinariis 3-ternatis vel subpinnatis, ramorum plurimis vel omnibus aphyllis 90. *T. pinnatum*, var. *subternatum*.
 a. Folia pinnata, pinnis ternatis. . . . 89. *T. pinnatum*.

87. *T. pudicum* Standley & Boivin, sp. nov. *Planta* glabra, 5–25 cm., ramosa, ramis foliosis. *Caulis* gracilis erectus nisi basis procumbens. *Folia* ternata et fere omnia sessilia. Inferiora desunt vel *stipulae* istorum adsunt, quae *stipulae* oppositae lanceolatae et 2–4 mm. longae sunt. *Stipulae* foliorum fere omnes auriculatae et erosae. *Pedunculi* 2.5–5.0 cm. Flores singulae in ramis singulis. *Sepala* floris maris viridia ovata ca. 3.5 mm. longa. *Filamenta* ca. 5 mm. *Antherae* ca. 3.5 mm., *acumine* ca. 0.5 mm. *Planta* foeminea ignota. Floret Julio.—MEXICO, MICHOACAN: *Leavenworth*, & *Hoogstraal* 1013, 2 mi. so. of Tancitaro, edge of pedregal, along edge of canyon in moist soil, open situation, less than 1 ft. high, alt. 6000 ft., July 19, 1941 (F, TYPE; M, ISOTYPE). FIG. 87.

88. *T. MADRENSE* Rose, Contrib. U. S. Nat. Herb. 5: 188, 1899. *Planta* glabra ramosa rigida 20–30 cm., ramis foliosis. *Ovaria* tamen interdum puberula, pilis capitatis translucidis minutissimis. *Folia* ramorum 1–2-ternata cetera 2-(3)-ternata. *Stipulae* integrae. *Pedunculi* 1.5–3.0 cm. Flores in paniculis angustis caulem et ramos definientes. *Sepala* foeminei lanceolata 1–2 mm. longa. *Stigma* 1.0–1.5 mm. *Carpella* matura ventre 3–4 mm. longo et 1.5–1.8 mm. lato. *Planta* mascula et tempus florendi ignota.—MEXICO, DURANGO: *Rose* 3505, Sierra Madre, alt. 5200 ft., Aug. 15, 1897 (US, paratype). NAYARIT: *Rose* 2232, Territorio de Tepic, in the Sierra Madre, near Santa Teresa, Aug. 13, 1897 (US, TYPE; G, ISOTYPE). FIG. 88.

Type not seen.

89. *T. PINNATUM* Watson, Proc. Am. Acad. 23: 267, 1888. *Planta* erecta rigida glabra, 2–8 dm. alta. *Radices* tuberosae. *Folia* caulinarum pinnata, pinnis ternatis vel simplicibus raro pinnatis. *Stipulae* integrae. *Foliolae* parvae, basae cuneatae, apicales saepius trifidae. *Sepala* floris maris elliptica, 3.5–6.0 mm. longa, foeminei lanceolata vel linearia 1–2 mm. longa. *Filamenta* 3–4 mm. *Antherae* 2.5–4.5 mm., *acumine* 0.3–0.7 mm. *Stigma* 0.6–1.5 mm. *Carpella* matura 3.5–5.0 mm. longa, *stipite* 0.2–0.4 mm., ventre 2.5–3.0 mm. longo et 1.5–1.7 mm. lato, *nervo* dorsali irregulariter convexo, ventrali convexiore. Floret Junio Julioque.—MEXICO, CHIHUAHUA: *LeSueur* 1059, Culebra Mts., Aug. 18, 1936 (F, G); *S. S. White* 2255, 4 miles northwest Chihuahua, Majalca (Pilares), alt. 6800 ft., Aug. 11, 1939 (G); *M. E. Jones*, Sierra Madre Mts., Soldier Canyon, alt. 6600 ft., Sept. 16, 1903 (CA, UC); *Townsend & Barber* 134, in the Sierra Madres, near Colonia Garcia, alt. 7500 ft., July 15, 1899 (F, G, M, NY, UC, US); idem 110, July 6 (F, M, NY, US); *Shreve* 9050, summit of Santa Clara Mts., in pine forest, alt. 7100 ft., Aug. 13, 1939 (G); *Pringle* 1563, Sierra Madre, alt. 7000–8000 ft., Oct., 1888 (UC); *Pringle* 1887, base of the Sierra

Madre, pine plains, Sept. 20, 1887 (G, TYPE; ANS, F, NY, US, ISOTYPES); *Nelson 6037*, in the Sierra Madre, June–July, 1899 (NY, US); *Shreve 7997*, 6 mi. w. of C. Guerrero, in open oak and pine forest, alt. 7100 ft., July 25, 1937 (F); *Knobloch 5256*, San Juanito, July 20, 1938 (F); *Hartman 772*, near canyon de St. Diego, moist places on high mountains, “Culantro”, Sept. 17, 1891 (G, US). SONORA: *Pennell 19,611*, Cerro Saguarivo, east of San Bernardo, on rocks, alt. 1500–1600 m., Aug. 7–8, 1935 (ANS); *Schott 3*, Sierra del Najarito, June 28, 1855 (F). DURANGO: *E. Palmer 381*, Otinapa, July 25–Aug. 5, 1906 (F, G, M, NY, UC, US); *Garcia 341* (US); *Nelson 4541*, near El Salto, alt. 8000–8700 ft., July 12, 1898 (US); *Pennell 18,324*, El Salto, dry open pineland, herb, alt. 2570–2600 m., Aug. 28, 1934 (ANS). FIG. 89, a–c.

90. *T. PINNATUM* Wats., var. **subternatum** var. nov. A varietate typica differt *foliis* caulinaris subternatis vel etiam ternatis foliolisque membranaceis. *Planta* humilior est, 1–4 dm. alta, et crescit in locis humidioribus. Floret Julii mense.—MEXICO, CHIHUAHUA: *Gentry 1526*, Sierra Charuco, Rio Fuerte, transition, herb scattered along rocks in spring in meadow, July 25, 1935 (F, TYPE; ANS, G, M, UC, US, ISOTYPES); *LeSueur 1211*, Chuichupa, Aug., 1936 (G). DURANGO: *Pennell 18,378*, El Salto, edge of marsh, herb, alt. 2530–2540 m., Aug. 28, 1934 (ANS).

Subsectio **Dioica** (Prantl), stat. nov. Sect. *Camptogastrum*, E. *Dioica* Prantl, Nat. Pfl. **3**, 2: 66, 1888. *Plantae* glabrae. *Radices* fibrosae. *Caulis* erectus rigidus. *Stipulae* integrae. *Stipellulae* desunt. *Petioli* articulati in insertione. *Carpella* matura sessilia inflata, ventre symmetrico nec compresso, pariete firmo, *nervis* simplicibus et directis. Species typica: *Thalictrum dioicum* L. ut patet e Prantl.

This group is made up of only one very distinct and little variable species.

91. *T. DIOICUM* L., Sp. Pl. **1**: 545, 1753. *T. laevigatum* Michx. Fl. Bor.-Am. **1**: 322, 1803. *T. pauciflorum* Rafinesque, Atl. Journ. **1**: 151, 1832, nec *T. pauciflorum* Royle, Ill. Bot. Him. **52**, 1839, nec *T. pauciflorum* Schur, Verh. Sieb. Ver. Nat. **3**: 84, 1852, nec *T. pauciflorum* Steph. ex Lec., Bull. Soc. Bot. Belg. **24**: 302, 1885. *T. dioicum* L., var. *genuinum* Lec., Bull. Soc. Bot. Belg. **24**: 142, 1885. *T. pulchellum* Pursh ex Lec., Bull. Soc. Bot. Belg. **24**: 307, 1885, nomen nudum. *T. dioicum* L., var. *adiantinum* Greene, Ott. Nat. **23**: 39, 1909. *T. dioicum* L., var. *huronense* Greene, l. c. 1909. *T. dioicum*, L. var. *Langfordii* Greene, l. c. 40, 1909. *Leucocoma dioica* (L.) Nieuwland, Amer. Midl. Nat. **3**: 324, 1914.—*Planta* omnino glabra erecta rigida, 3–8 dm. *Radices* fibrosae. *Folia* supraternatisecta, basilaria

0-3 in planta, caulinarum 0-1, inflorescentiarum plurima. Folium inferius inflorescentiae petiolo 3-8 cm. *Sepala* floris maris ovata vel elliptica 2.5-4.0 mm. longa, foeminei ovata vel obovata 1.8-2.2 mm. longa. *Filamenta* lutea 3.5-5.5 mm. *Antherae* luteae oblongo-lanceolatae vel lineares 1.4-4.0 mm. longae, *acumine* 0-0.2 mm. *Stigma* 1.0-2.5 mm. *Carpella* matura 4-5 mm. longa, *stipite* 0.3-0.4 mm., ventre ovoideo vel ellipsoideo 3.4-4.3 mm. longo, 1.5-1.8 mm. lato. *Nervi* carpellorum maturorum parum a costis distincti, pariter arcuantes vel interdum nervus ventralis quam dorsali convexior. Floret Aprili, Majo, Junio, Julioque.—“CANADA”: *Kalm* (Linnean Society Lond., TYPE of *T. dioicum*; G, photograph). UNITED STATES (without localization): *Michaux*, in Pennsylvania et montibus Carolinae (Paris, National Museum, type of *T. laevigatum*; G, photograph). SAINT-PIERRE ET MIQUELON: *L. Arsène 238*, Saint-Pierre, marécages de la ferme Maillard, lieux herbeux et humides, 8 juillet, 1902 (NY); *L. Arsène 263*, Saint-Pierre, anse à Ravenel, lieux herbeux et humides, bois, 8 et 20 juillet, 1900 (G). QUÉBEC: *Peers*, Montreal, Mt. Royal, May 11, 1941 (CA); *C. H. Knowlton*, Missisquoi, Philipsburg, dry calcareous woods, Aug. 10-11, 1923 (G); *Macoun & Malte 88,011*, Hull, north end of Fairy Lake, May 9, 1913 (C). MAINE: *Fernald*, Penobscot Co., Orono, rocky woods, May 19, 1890 (NE); *C. A. E. Long 858*, Knox Co., Rockland, rocky bank, May 2, 1921 (NE); *Fernald 13,636*, Kennebec Co., Vassalboro, brooksides and gullies in clay terraces, July 6, 1916 (NE); *Furbish*, Cumberland Co., Brunswick, 1880 (NE). NEW HAMPSHIRE: *Beetle 331*, Grafton Co., Hanover, May 16, 1936 (NE); *Rand & Robinson 458*, Cheshire Co., Troy, Gap Mt., rocky woods, June 13, 1898 (G, NE). VERMONT: *C. H. Knowlton*, Orange Co., Newbury, slaty woods, May 17, 1932 (NE); *E. E. Phelps*, Windsor Co., Windsor (NE); *E. F. Williams*, Rutland Co., Brandon, May 21, 1908 (G, NE); *Fernald, Harris, Drew et al.*, Bennington Co., Manchester, Mount Equinox, rich woods, May 21, 1932 (NE). MASSACHUSETTS: *Morong*, Hamilton, damp places among rocks, May & June 1875 (F, paratype of *T. dioicum* var. *Langfordii*); *A. W. Cheever*, Plymouth Co., Hingham, June 22, 1924 (NE); *Bean & Schweinfurth 16,071*, Worcester Co., Charlton, woods, May 20, 1916 (NE); *C. H. Knowlton*, Franklin Co., Greenfield, moist alluvial terrace, May 12, 1912 (NE); *Forbes & Wheeler*, Hampshire Co., Mt. Tom, ledges near base, Holyoke diabase, May 17, 1903 (NE); *St. John & White 168*, Hampden Co., Russell, sandy bank, sericite schist (Savoy Schist), May 17, 1913 (NE); *Knowlton & Schweinfurth*, Berkshire Co., Mount Washington, dry open woods, May 30, 1919 (NE); *G. Gilbert*, Newton, Pine Grove, May 6, 1894 (G). RHODE ISLAND: *Leland*, Johnston Co., Snake Den, May 13, 1899 (NE);

M. B. Simmons, Newport Co., Middletown (NE). CONNECTICUT: *Woodward*, New London Co., Rachel's Hut, rocky woods, May 27, 1905 (NE); *P. Spalding*, Hartford Co., East Granby, May, 1920 (NE); *Safford*, New Haven Co., New Haven, East Rock, June 2, 1884 (US). NEW YORK: *O. P. Phelps 460 & 461*, Canton, woods, May 19, 1914 (G); *Burnham*, Washington Co., ½ mile east of Tripoli schoolhouse, rocky copse, May 13, 1914 (G); *McVaugh 4107*, Columbia Co., Ghent, moist rocky banks, May 1, 1936 (G); *Raup 8105*, Orange Co., Black Rock Forest, ravine of Canterbury Brook, May 18, 1937 (G); *Eames & Metcalf 2301*, Tompkins Co., Ithaca, gravelly soil, side of gully, May 7, 1904 (G); *E. B. Bartram*, Monroe Co., Rochester, moist woods, May 15, 1910 (G); *Peck*, St. Lawrence Co., Rossie, June 10, 1909 (US). NEW JERSEY: *Carey*, Bergen, ravine, May 24, 1842 (G); *Fogg 12,313*, Somerset Co., Sourland Mts., about 4 m. n. w. of Blawenburg, July 7, 1937 (G); *B. Long 39,983*, Hunterdon Co., Treasure Island, steep wooded bank along Delaware River, May 21, 1933 (G). PENNSYLVANIA: *Fogg 6502*, Delaware Co., n. of Swarthmore, wooded hillslope along creek, May 17, 1934 (G); *Heller*, Lancaster Co., on the Conestoga near Binkley's Bridge, in limestone, May 4, 1901 (G); *Galen 24*, Lancaster Co., April–May, 1885 (G); *Wahl 643*, Elk Co., 3 mi. W. of Caledonia, gravelly roadside, June 2, 1940 (G); *Fender 1500*, Union Co., 2 m. se. of Lewisburg, along West Branch of Susquehanna River, June 15, 1936 (G); *E. B. Bartram*, Chester Co., Frazer, April 23 & 30, 1910 (G); *Fogg 14,473*, Bradford Co., 1.5 mi. n.-nw. of Wyalusing, along Susquehanna River, wooded crest of cliffs, June 8, 1938 (G). DISTRICT OF COLUMBIA: *T. A. Williams*, Rock Creek, May 1, 1898 (G). WEST VIRGINIA: *Eggleston 4344*, White Sulphur Springs, May 17–18, 1909 (G). VIRGINIA: *Small*, Smyth Co., E. Marion, on Stalie's Knob and Stalie's Creek, alt. 2400 ft., May 18–19, 1892 (M); *Hunnewell*, Bath Co., Hot Springs, woods, May 11, 1916 (G); *A. H. Curtiss*, Bedford Co., April 15, 1871 (G); *Fogg 14,589*, Giles Co., 2¼ mi. ne. of Mountain Lake P. P., Salt Pond Mt., alt. 3800 ft., June 22, 1938 (G); *Churchill*, Rockbridge Co., Goshen, rocky woods, April 28, 1915 (M). NORTH CAROLINA: *Ashe*, Mitchell Co., Frank P. O., May 11, 1893 (NC); *Peattie 1667*, Polk Co., Tryon, in cool mountain woods, April 20, 1922 (NC); *Barksdale*, Bat Cave Mountain, April 19, 1937 (NC). SOUTH CAROLINA: *House 2064*, Oconee Co., Tamassee Falls, May 5, 1906 (M); *House 1855*, Oconee Co., Clemson College, near Seneca River, low woods, April 16, 1906 (M). GEORGIA: *Leeds 2012*, Union Co., 1 mile n. of Frogtown Gap on branch of Helton Creek, June 1, 1934 (ANS); *Churchill*, Lookout Mountain, near the line between Tennessee and Georgia, April 19, 1906 (G). ONTARIO: *J. Macoun 33,609*, Niagara, May 9, 1901 (C, G); *T. M. C. Taylor*

et al. 2277, Algoma District, Carp River, mixed woods, bottomlands, July 15, 1935 (C); *J. Macoun* 72,515, near St. Thomas, woods, June 24, 1907 (C, type of *T. dioicum* var. *adiantinum*); *J. Macoun* 33,608, Lake Huron, Pt. Edward, June 12, 1901 (G, NY). MICHIGAN: *Greenman* 3356, Sawyer Beach, Hemlock Dune, May 5, 1912 (G). OHIO: *Clavenger*, Columbus, June, 1903 (US); *Gleason*, north of Columbus, rich wooded hillsides, May 13, 1905 (G); *Webb* 496 & 497, Portage Co., Nelson Ledge, May 3, 1902 (G). INDIANA: *Deam* 15,851, Noble Co., about 4 mi. northwest of Kendallville, in woods, June 6, 1915 (G). KENTUCKY: *Demaree* 11,252, Greenup Co., South Portsmouth, fertile river-hillsides, April 21, 1935 (M); *W. A. Anderson* 407, Fayette Co., Elklick, March 26, 1927 (G); *Blumer* 238, Louisville, River Road, woods, April 2, 1933 (G); *W. A. Anderson* 9, Henderson Co., Robard, April, 1923 (G). TENNESSEE: *Ruth* 383, Knoxville, Tennessee River, bluffs, May 20, 1894 (G); *Ruth*, Knoxville, rocky woods, April, 1896 (M); *Eyles* 7713, Obion Co., near Walnut Log, bluff, April 25, 1941 (G). ALABAMA: *Mohr*, Huntsville, Mount Sano, in sylvis umbrosis, May 8, 1881 (F); *Mohr* 66, near Huntsville, Mount Sano, upper districts, rich woods, May 1, 1881 (US); *Harper* 3340, Jackson Co., southeast of Scottsboro, northwest slope of Sand Mountain, among limestone rocks in woods, April 17, 1935 (G, NY, US). ILLINOIS: *Pease* 11,831, Champaign Co., Urbana, moist bank near Crystal Lake, April 27, 1909 (G); *Gleason* 527, Urbana, hillside, April 28, 1899 (G). MINNESOTA: *Pammel* 204, Cass Lake, abundant in pine woods with Hard Maple and Basswood, July 28, 1925 (G); *M. L. Grant* 2703, Clearwater Co., Itasca Park, near campus, woods, sand, July 9, 1929 (G); *Sandberg* 1148, Itaska Lake, along stream, July 6, 1891 (US). IOWA: *Pammel*, Ames, College Park, May 28, 1927 (ANS); *Fink*, Fayette, prairies, 1894 (G); *Fink*, 1894 (US); *Fink* 56, Fayette Co., May 15, 1894 (US). MISSOURI: *Steyermark* 11,569, Wayne Co., west of Grenville, along St. Francis River, July 9, 1936 (M); *Steyermark* 11,220, Barry Co., south of Shell Knob, Smith Pond, wooded lime slopes, April 26, 1936 (M); *E. J. Palmer* 35,966, Benton Co., Fredonia, rich woods along bluffs of Osage River, May 22, 1929 (G); *E. J. Palmer* 22,826, Stone Co., Galena, limestone bluffs of the James River, rich woods, May 27, 1923 (M); *Bush* 753, Jackson Co., Courtney, May 2, 1896 (M, US); *Bush* 98, Sheffield, common on rocky hill, May 12, 1898 (G, M, US).

Specimens collected in July at Saint-Pierre are in flower, while in Georgia and Alabama this species matures its fruits in May or June. No specimens were seen either from eastern Québec or from the Maritime Provinces. We do not know if there is any type in existence of *T. pauciflorum* Raf.

Subsectio **Incurvata** subsect. nov. *Plantae* stoloniferae glabrae vel pubescentes. *Pubescentia* si adest e pilis capitatis minutis translucidis. *Folia* supraternatisecta. *Inflorescentia* aphylla vel, parum si foliosa foliis sessilibus, paniculata, apice acuta. *Flores* dioici, rarissime polygami. *Sepala* dimorpha, floris masculi majora. *Filamenta* colorata. *Carpella* matura subsessilia costata apice incurvata, *nervo* dorsali convexiore quam ventrali, pariete saepius incrassato. *Nervi* carpellorum costis parum distincti. *Species* typica *Thalictrum venulosum* Trel. sit.

- a. *Carpella* matura haud compressa. . . . b.
 b. *Stigma* (1.0–) 1.5–2.0 (–2.5) mm., venter carpelli maturi 3–4 mm. longus, 1.8–2.4 mm. latus. . . . 92. *T. venulosum*.
 b. *Stigma* (2.0–) 2.5–4.0 (–5.0) mm., venter carpelli maturi 4–6 mm. longus. . . . c.
 c. *Venter* carpelli maturi 2.5–2.7 mm. latus. . . . 93. *T. confine*.
 c. *Venter* carpelli maturi 2.0–2.3 mm. latus. . . . 94. *T. confine*, var. *Greeneanum*.
 a. *Carpella* matura paullum compressa. . . . 95. *T. confine*, var. *columbianum*.

92. *T. VENULOSUM* Trelease, Proc. Bost. Soc. Nat. Hist. **23**: 302, 1886. *T. campestre* Greene, Erythrea, **4**: 123, 1896. *T. Lunellii* Greene, Midl. Nat. **1**: 102, 1909. *T. thyrsoides* Greene, Midl. Nat. l. c. 1909. *T. thyrsoides sylvanum* Lunell, Amer. Midl. Nat. **2**: 157, 1912. *Leucocoma Lunellii* (Greene) Lunell, l. c. **4**: 361, 1916. *L. thyrsoides* (Greene) Lunell, l. c. 361, 1916. *L. thyrsoides sylvana* (Lunell) Lunell, l. c. 361, 1916. *Planta* 20–75 cm. *Folia* basilaria 1–2, caulinaria 1–3 in planta. *Pedunculi* fructuum 0.3–1.5 cm., conspicue ascendentes vel appressi, saepius gemini. *Sepala* floris masculi 3.5–4.0 mm. longa, foeminei ca. 2 mm. *Filamenta* 3–4 mm. *Antherae* (2.0)–2.5–3.5 mm., *acumine* ca. 0.1 mm. *Stigma* (1.0)–1.5–2.0–(2.5) mm. *Carpella* matura stipite 0–0.3 mm., ventre 3–4 mm. longo et 1.8–2.4 mm. lato. Floret Majo, Junio, Julioque.—NORTHWEST AMERICA: *Franklin Expedition* (G, TYPE of *T. venulosum*); *Richardson 207* (G, paratype). QUÉBEC: *D. Potter 380*, James Bay, mouth of the Abitibi River, bank opposite Allen Island, June 30, 1929 (G); *Roy*, comté de Labelle, Bellerive, 9 juin 1935 (G). ONTARIO: *C. S. Williamson 2028 & 2032*, vicinity of Fort Williams, Kaministiquia, Aug. 2, 1912 (ANS); *D. Potter 379*, James Bay, Charlton Island, 3 miles N. W. of Hudson Bay Co.'s Post, sand along fresh-water creek, July 6, 1929 (G). WISCONSIN: *Griscom*, Sawyer Co., R. R. right of way north of Hayward, June 11, 1928 (G). MANITOBA: *E. L. Greene*, near Carberry, prairies, 1890 (G-ND, type of *T. campestre*; G, photo of type; NY, isotypes); *Scamman 2892*, Riding Mountain National Park, Clear Lake, alt. 2016 ft., Aug. 29–Sept. 2, 1941 (G); *Macoun & Herriot 69,804*, 6 mi. east of Forest, June 19, 1906 (G); *Herriot*

69,803, Portage La Prairie, May 31, 1906 (G). MINNESOTA: *Chandonnet*, Ottertail Co., Ottertail Lake, prairies, June 8, 1910 (N-ND). NORTH DAKOTA: *Stevens 177*, Cass Co., Fargo, open places in woods, June 30, 1936 (G, F); *Lunell*, Benson Co., peninsula of Lake Ibsen, in woodlands, May 30, 1910 (NY, syntype of *T. thyrsoideum sylvanum*); idem, May 28 (N-ND, syntype of *T. thyrsoideum sylvanum*); idem, May 24 (F, NY, syntypes of *T. thyrsoideum sylvanum*); *Lunell*, Ward Co., Minot, along Mouse River, in timber, July 1, 1909 (G-ND 14394, type of *T. Lunellii*; G, photo of type; N-ND, isotype); *Lunell 76*, Benson Co., Lees, in dry soil on the prairies, June 10, 1909 (G-ND, type of *T. thyrsoideum*; G, photo of type; N-ND, NY, isotypes). SOUTH DAKOTA: *E. J. Palmer 27,198*, Lawrence Co., Boulder Canyon near Deadwood, wet rocky ground along brook, June 12, 1929 (G); *Hayward 1404, 1425, 1840, 2060, 2200, 2304 & 2410*, Black Hills, various localities, 1927 (F). SASKATCHEWAN: *Bourgeau*, 1857-58 (G, paratype of *T. venulosum*); *J. Macoun 2952*, Crane Lake, June 9, 1894 (G); *Macoun & Herriot 69,802*, Tramping Lake, Aug. 4, 1906 (G); *J. Macoun 12,316*, near Prince Albert, lat. 53°, July, 1896 (G). ALBERTA: *J. Macoun 59,524*, Burnt River, north of Peace River, open prairies, July 19, 1903 (G); *Moodie 936*, Red Deer Valley, vicinity of Rosedale, low ground, alt. 2200-2500 ft., June 1, 1915 (F, G); *Raup 2430, 2433, 2434, 2435a, 2439, 2440, 2442 & 2444*, Wood Buffalo Park, various localities, 1928-29-30 (G). MONTANA: *B. J. Jones*, Gallatin Co., Sedan, June 11, 1901 (G); *Flodman 485*, Gallatin Co., East Gallatin Swamps, alt. 5000 ft., July 24, 1896 (US). WYOMING: *Clifford Richardson*, Alkali Co., Branch of Sandy R., 1878 (G, paratype of *T. venulosum*); *A. Nelson 7307*, Albany Co., Chug Creek, on the open bottoms, June 29, 1900 (G); *C. Schubert*, Albany Co., Bear Creek about 2 miles from Eagle Peak, and 4 miles from Laramie Peak, Aug. 22, 1899 (US); *Forwood*, Wind River, July 24, 1882 (G).

BRITISH COLUMBIA: *Raup & Abbe 3557*, north bank of Peace R., at Taylor Flats, dry bluffs, about 56° 8' N., 120° 40' W., alt. 1600 ft., June 12, 1932 (G); *McCabe 674*, Chezacut, very abundant, even in dry sites, Aug. 30, 1933 (UC); *S. Brown 960 & 972*, North Branch Saskatchewan, Kootenay Plains, June 17, 1908 (G). FIG. 92, a-e.

93. *T. CONFINE* Fernald, RHODORA, 2: 232, 1900. *T. purpurascens* L. sensu DC. Syst. 1: 174, 1817. *T. purpurascens* L., β *monoicum* DC. Syst. 1: 174, 1817. *T. dioicum* \times *purpurascens* Trel., Proc. Bost. Soc. Nat. Hist. 23: 301. 1886. *Planta* 25-120 cm. *Folium* basilarium vel solitarium vel deest, caulinarum 1-5 in planta. *Pedunculi* fructuum (0.5)-1.5-2.5-(3.0) cm. ascendentes. *Sepala* floris maris 2.5-5.0 mm. longa, foeminei 1.5-2.4 mm. *Filamenta* 3.0-4.5-(5.5) mm. *Antherae* (2.0)-3.0-

4.0 mm., *acumine* ca. 0.4 mm. *Stigma* (2.0)–2.5–4.0–(5.0) mm. *Carpella* matura stipite 0.1–0.2 mm., ventre 4–6 mm. longo et 2.5–2.7 mm. lato, *nervis* nonnunquam ramosis sinuosisque. Floret Junio vel Julio et interdum Augusto.—LABRADOR: *J. Fowler*, Lower East Main Coast, Aug. 20, 1892 (US). QUÉBEC: *D. Potter* 382, James Bay, East Main, marshy river bank, July 11, 1929 (G); *Williams & Fernald*, Témiscouata Co., Rivière-du-Loup, rocky bank of the St. Lawrence, Aug. 2, 1902 (G); *Rousseau* 26,423, comté de Rimouski, pointe du Vieux-Bic, sur les schistes, 30 juin, 1927 (G); *Fernald & Pease* 25,074, Matane Co., Ste. Félicité, brookside, July 17, 1922 (G); *Victorin & Rolland* 18,777, archipel de Mingan, île au Marteau, sur les rivages calcaires, 15 juillet, 1924 (G); *Victorin* 4288, Anticosti, cap à l'Ours, Aug. 23, 1917 (G); *Victorin* 28,156, Boucherville, bordant le rivage de l'une des îles, avec *Carex intermedia* et *Carex nutans*, 1 sept., 1928 (G); *Victorin* 3233, St.-Eustache, Aug., 1916 (G); *Ouimet & Fassett* 18,100, Gatineau Co., Hull, June 29, 1934 (C); *C. H. Knowlton*, Philipsburg, dry open woods, shale ledges, July 18, 1931 (G). NEW BRUNSWICK: *Chalmers* 844, Restigouche, Eel River, woods, July 29, 1876 (C, marked by Trelease *T. dioicum* × *purpurascens*; G, same note); *J. Macoun* 21,136, along the St. John, above Woodstock, July 3, 1899 (C, G); *Williams, Collins & Fernald*, Gorge of Aroostook River, Andover, talus from calcareous cliffs, July 17, 1902 (G); *Pease & Edgerton* 27,259, Upper Mangerville, alluvium by St. John R., June 29, 1939 (G); *G. U. Hay*, St. John, Aug., 1890 (G). MAINE: *Fernald*, Aroostook Co., Fort Fairfield, fruits from plant in river-thicket, Sept. 19, 1900 (G, TYPE of *T. confine*; C 69,609, ISOTYPE); *Fernald* 215, Fort Fairfield, abundant in alluvial thickets, fl. June 6, 1901, fr. July 16, 1902 (G, NE). VERMONT: *Eggleston* 4869, Ferrisburg, Gardener's Island, July 17, 1909 (G); *Flynn*, Chittenden Co., Burlington Bay, rocky shore of Lake Champlain, Sept. 8, 1909 (G, NE); *C. H. Knowlton*, Franklin Co., Lake Champlain, Swanton, sandy shore, July 24, 1926 (NE); *C. H. Knowlton*, Grand Isle Co., Grand Isle, swampy woods near Lake, July 24, 1935 (NE). NEW YORK: *House* 10,323, Essex Co., Port Henry, rocky shore of Lake Champlain, July 12, 1924 (G, US). ONTARIO: *J. Macoun* 2956, Ottawa, Rideau Hall, thickets, Aug. 8, 1894 (C, paratype); *D. Potter* 381, James Bay, Moose River, north end of Saw Pit Island, marsh, July 1, 1929 (G); *Pease & Bean* 23,557, Thunder Bay District, W. side of Jack Fish Bay, beside a brook, July 8, 1933 (C, G); *Taylor, Losee & Bannan* 905, Thunder Bay District, Sibley Tp., Talus Bay, gravelly beach, June 24, 1936 (C). MICHIGAN: *Fernald & Pease* 3306, Schoolcraft Co., east of Manistique, glades and openings in thicket bordering calcareous beach of Lake Michigan, July 9, 1934 (G). MANITOBA: *Bourgeau*, Lake Winnipeg Valley,

1857 (G); G. Gardner, Moose Factory, South Shore, 19 juin, 1932 (ANS). MINNESOTA: Lakela 1408 & 1428, Duluth, June 11 & 19, 1936 (ANS); idem, June 17, 1938 (G). FIG. 93, a-f.

Thalictrum dioicum × *purpurascens* Trel. also included *T. coriaceum* (Britt.) Small. Trelease referred to those plants being "hybrids of *T. dioicum* L. with *T. purpurascens* L. or *polygamum* Muhl." No specimen has been found marked by Trelease *T. dioicum* × *polygamum*. Oddly enough, one of these supposedly hybrid plants comes from a region where the only other *Thalictrum* yet known to occur is *T. polygamum*.

94. T. CONFINE Fern. var. **Greeneanum**, var. nov. *Planta* 30–70 cm. *Folia* basilaria 1–3, caulinaria 1–2 in planta. *Filamenta* 2.5–3.2 mm. *Antherae* 2.5–3.0 mm., *acumine* 0.3–0.7 mm. *Stigma* 2.0–3.0 mm. *Carpella* matura ventre 4.5–5.0 mm. longo et 2.0–2.3 mm. lato. Floret saepius Julio, interdum Junio.—COLORADO: Parry, Middle Park, July, 1864 (G, paratype of *T. venulosum*); Vasey 10B, Middle Park, 1868 (G, paratype of *T. venulosum*); Baker 551, Gunnison, alt. 7680 ft., July 23, 1901 (G, TYPE; NY, US, ISOTYPES); idem 556 (G, US); Hall & Harbour 8, lat. 39°–41°, 1862 (F); Coulter, Weston's Pass, alt. 11,000 ft., July 18, 1873 (US); Patterson, Middle Park, west end, damp plains, July 27, 1875 (F); B. H. Smith, Archuleta Co., Pagosa Springs, June 15, 1894 (ANS); B. H. Smith, Mineral Co., Wagon Wheel Gap, July, 1882 (ANS). UTAH: Pennell & Shaeffer 22,522, Wasatch Co., head of Daniels Canyon, northeast of Hebert, below Daniels', rocky slope, alt. 7900–8000 ft., July 1–2, 1938 (ANS); Watson 9, Wahsatch, Provo Canon, July 1869 (US).

E. L. Greene left two unpublished names on sheets of this variety.

95. T. CONFINE Fern., var. **columbianum** (Rydb.), stat. nov. *T. fissum* Greene, Pittonia, 4: 233, 1901. *T. columbianum* Rydberg, Bull. Torr. Bot. Club 39: 320, 1912. *T. occidentale* Gray, var. *columbianum* (Rydb.) St. John, Fl. South. Wash. & Adj. Id. 156, 1937. *Planta* 50–80 cm. *Folia* basilaria 0–1, caulinaria 1–3 in planta. *Pedicelli* 0.5–2.5 cm. aetate fructuum maturandorum. *Filamenta* 3–6 mm. *Antherae* 1.5–4.0 mm. *Stigma* 2.0–3.0 mm. *Carpella* matura ventre paullulum compresso, 3–6 mm. longa et 1.8–2.5 mm. lata. Floret Majo, Junio Julioque.—IDAHO: Mulford, De Lamar, alt. 7000 ft., July 7, 1892 (G, paratype of *T. columbianum*). OREGON: Cusick 1137, 1886 (NY, paratype of *T. columbianum*); Cusick 1337, Mts. E. Oregon, a form not common in the mountains, June, July, 1886 (G, NY, paratypes of *T. columbianum*); Henderson 9056, Harney Co., Steins Mts., near Sheep Camp, moist bottoms in aspen woods,

alt. 5500 ft., June 15, 1927 (CA); *Henderson 9058*, Harney Co., 15 miles above Burns, up Silvies River, moist sunny flats, June 13, 1927 (CA); *Cusick*, Stein's Mountains, at the head of Wild Horse Creek, July 14, 1898 (G-ND, type of *T. fissum*; G, photographs of the type). WASHINGTON: *Elmer 599*, Okanogan Co., Loomiston, Mount Chapaca, abundant in the meadow on the south slope, Aug., 1897 (NY, TYPE of *T. columbianum*; BG, US, ISOTYPES); *G. R. Vasey 155*, 1899 (G, NY, US, paratypes of *T. columbianum*); *Henderson 2367*, Yakima Co., June, 1892 (G); *Piper 1467*, Withman Co., Pullman, June 26, 1893 (G); *Lyall*, Pend d'Oreille River, 1861 (G).

BRITISH COLUMBIA: *Raup & Abbe 2642*, vicinity of Hudson Hope, south slopes of Peace River Valley, about 56° 1' N., 121° 53' W., June 21, 1932 (G); *McCabe 2407*, fourteen miles north of Kamloops, moist hollow in open range, June 13, 1935 (UC); *McCabe 8232*, one mile southeast of New Hazelton, semi-open forest edge, border of bog, Aug. 9, 1940 (UC).

Subsectio **Clavocarpa** subsect nov. *Plantae* glabrae elatae rigidae. Species duae, alia stolonifera alia haud. *Caulis* saepius glauca. *Folia*, nisi inferiora, sessilia in apice dilatationis petiolaris. *Inflorescentia* paniculata copiosa. *Sepala* lanceolata. *Stigma* bialatum. *Carpella* matura recta stipitata, *nervis* exsertis sublatis in costis obtusis, nervo ventrali convexiore quam dorsali. Species typica *Thalictrum coriaceum* (Britt.) Small sit.

Planta stolonifera; antherae luteae vel viridulae; carpella matura ventre lanceolato 96. *T. Steeleanum*.
 Planta haud stolonifera; stamina imprimis lutea, deinde purpurascencia; carpella matura ventre ovoideo 97. *T. coriaceum*.

96. *T. Steeleanum*, sp. nov. *Planta* glabra stolonifera 1.0–1.5 m. *Foliolae* majusculae, 2.5–7.0 cm. latae, interdum subquadratae. *Sepala* mascula 4–5 mm. longa, foeminea ovata ca. 2 mm. longa. *Filamenta* saepius lutea, interdum purpurascencia 4.0–4.5 mm. *Antherae* saepius luteae, interdum viridulae, lineares, 3.2–4.5 mm., *acumine* 0.4–1.0 mm. *Stigma* 2.0–2.8 mm. *Carpella* matura saepius purpurascencia, *stipite* 0.6–1.8 mm. longo, ventre lanceolato 4.0–6.5 mm. longo et 1.7–2.2 mm. lato, *nervis* saepius undulatis. Floret Majo et interdum Junio.—PENNSYLVANIA: *Brown & Saunders*, Somerset Co., near Rockwood, along Casselman River, on opposite sides of the river, June 3, 1899 (ANS). MARYLAND: *Steele*, C. & O. Canal, April 11, 1903 (US); *Steele*, bank of Potomac above D.C., July 23, 1902 (G, NY); *Steele*, Potomac, near the Md. line, Feeder Dam Island, July 10, 1902 (NY); *Steele*, idem, May 10 (G, NY); *Steele*, bank of Potomac, above D.C., July 26, 1902 (G, NY); *E. L. Morris 1527*, Montgomery Co., Plummers Island, alluvial woods, May 18, 1902 (BG); *Long & Bartram 1292*, Cecil Co.,

north of Conowingo, woods, June 1, 1913 (G, TYPE); idem 1287 & 1289 (ANS); Hitchcock 12,902a, Great Falls, woods along canal, June 21, 1917 (G); Shriver, Cumberland, 1894 (NY). VIRGINIA: Allard 2873, Fauquier Co., near Markham, woods at top of Rattlesnake Mountain, abundant and in full bloom, underground rhizomes a rich golden yellow, May 30, 1937 (G); E. L. Morris 2361, Falls Church, dark woods, May 1896 (BG); Camp 1174a & 1174b, Shenandoah National Park, south and southeast of Skyland, alt. about 3500 ft., May 25, 1936 (NY); Rawlinston 16, Madison Co., near Hoover's Camp, June 22, 1934 (US); Wherry & Pennell 13,344, Page Co., southeast of Luray, Stony Man Mountain, Aug. 24, 1927 (M). FIG. 96, a-d.

97. *T. CORIACEUM* (Britt.) Small, Mem. Torr. Bot. Club, 4: 98, 1893. *T. dioicum* L., $\beta?$ *stipitatum* Torr. & Gray, Fl. N. Amer. 1: 38, 1838. *T. dioicum* L., var. *stipitatum* Lecoyer, Bull. Soc. Bot. Belg. 24: 142, 1885, pars. *T. dioicum* L., var. *coriaceum* Britton, Bull. Torr. Bot. Club, 25: 136, 1898. *T. caulophylloides* Small, Bull. Torr. Bot. Club, 25: 136, 1898. *Planta* glabra, haud stolonifera, 65-100-(150) cm. *Foliolae* (1)-3-(7) cm. latae. *Sepala* floris masculi 3.5-4.0 mm. longa, foeminei fere lanceolata 1.5-2.0 mm. longa. *Filamenta* 4.5-5.0 mm. *Antherae* 2.0-3.5 mm., *acumine* ca. 0.4 mm. *Stigma* 1.5-2.5 mm. *Carpella* matura *stipite* 0.3-5.5 mm., ventre ovoideo 2.3-4.0 mm. longo et 1.3-2.0 mm. lato, *nervis* paululum sinuosis. Floret Junio, rarissime Majo vel Julio.—WEST VIRGINIA: Britton, White Sulphur Springs, May 16, 1897 (NY). VIRGINIA: Small, Smyth Co., slope of White Rock Mountain, alt. 3500-4000 ft., June 21, 1892 (F, M); A. H. Curtiss, Bedford Co., 1871 (F, G, M); E. S. & Mrs. Steele 146, near Luray, Stony Man Mountain and vicinity, alt. 3600 ft., Aug. 18, 1901 (G, M, NY, US); Steele, Augusta Co., vicinity of Augusta Springs, over meter high, alt. + 1200, Sept. 8, 1908 (M, US). NORTH CAROLINA: M. A. Curtis, Bald Mt. (G, type of *T. dioicum* $\beta?$ *stipitatum* Torr. & Gray); Small & Heller 263, Watauga Co., Blowing Rock Mountain, alt. 4000 ft., July 29, 1891 (NY, TYPE of *T. dioicum*, var. *coriaceum*; US, ISOTYPE); Porter, Mtns., June 28, 1880 (ANS, NY, paratypes of var. *coriaceum*); Small & Heller, Blowing Rock Mountain, alt. 4000 ft., June 10-20, 1891 (F, NY, paratypes of var. *coriaceum*); Small & Heller, eastern slopes of Blowing Rock Mountain, July 7, 1891 (F, paratype of var. *coriaceum*); idem 491 (ANS, F, M, paratypes of var. *coriaceum*); Small & Heller, on the road between Blowing Rock and Shull's Mill, June 16-17, 1891 (F, M, NY, paratypes of var. *coriaceum*); Small & Heller 491. Caldwell Co., summit of Stone Mountain, July 9, 1891 (ANS, US, paratypes of var. *coriaceum*); House 4346, Transylvania Co., Pisgah Ridge, alt. 4000-5000 ft., July 4, 1909 (US); Biltmore Herbarium 6043a, Buncombe Co., slopes of Cedar Cliff

Mountain, rich soil, May 24, 1898 (NY); *Mohr*, Grandfather Mountain, rich woods, July 27, 1894 (US). GEORGIA AND CAROLINAS: *Buckley*, in montibus Carolinae et Georgiae (M, paratype of *T. dioicum* × *purpurascens*); *Wright*, N. Georgia, 1875 (G). KENTUCKY: *Kearney* 290, Harlan Co., Big Black Mountain, Aug., 1893 (G, NY). TENNESSEE: *Svenson* 8309, Sevier Co., Thomas Ridge, south of Indian Gap, Aug. 12, 1935 (BG); *Ruth* 1800, Blount Co., Cade Cove Mountain, mountainsides, July, 1892 (NY, type of *T. caulophylloides*); *Eggert*, Davidson Co., woods, July 13, 1897 (M, NY). FIG. 97.

(To be continued)

ACER GRANDIDENTATUM IN OKLAHOMA

ELBERT L. LITTLE, JR.

This summary of *Acer grandidentatum* Nutt., bigtooth maple, in the Wichita Mountains, Oklahoma, is suggested by a recent note by Milton Hopkins (*RHODORA* 45: 273–274. 1943), questioning the presence of this species there. Hopkins referred to the maple of the Wichita Mountains in southwestern Oklahoma as: “*Acer saccharum* (in that region treated by most Oklahoma botanists as *A. grandidentatum*, but clearly not that, although further study may reveal it to be merely an isolated variety of the typical New England sugar maple).” He explained use of the name *Acer grandidentatum* in this way:

“Inasmuch as none of the authors prior to 1912 include *A. grandidentatum* in the flora of this state, it seems quite probable that the Wichita Mt. specimens were first identified (erroneously?) by G. W. Stevens (about 1915–16) as that plant, and that succeeding authors merely accepted his determination without further questioning.”

The sugar maples and related species are a variable group, and the distinctions are based largely upon variable leaf characters. The name of the eastern sugar maple, familiar to the present generation as *Acer saccharum* Marsh. and to past generations as *Acer saccharinum* Wangenh. and *Acer barbatum* Michx., must now be changed, with regret, to *Acer saccharophorum* K. Koch, as Mackenzie (*RHODORA* 28: 111–112, 233–234. 1926), Rousseau (*Nat. Canad.* 67: 161–200, 201–224, illus. 1940), and others have concluded. *Acer grandidentatum* Nutt., the closely related bigtooth maple of western United States, apparently is a parallel species developed from a common ancestor following long